

# 挤塑

# EXTRUSION

ASIA EDITION

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A single Guill tool can create multiple profiles in same extrusion!

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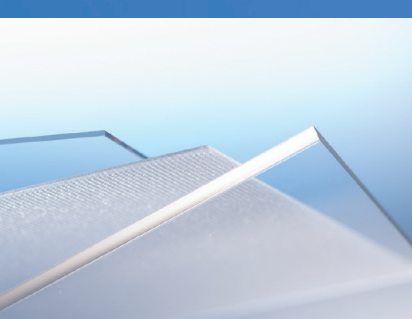
# BREYER

## extrusion lines



# Partnership knows no limits.

Clear solutions are our passion.



**The clear sheet is unrivalled in its ability to illustrate the importance and power of light and transparency.**

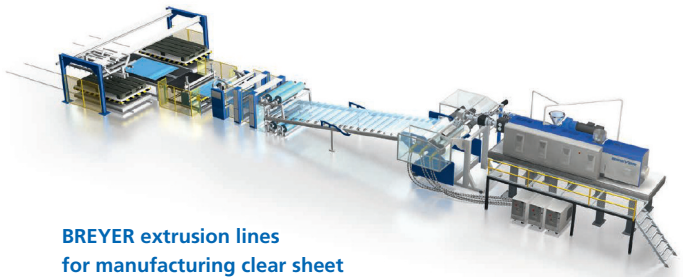
Essential is what you do *not* see here.

Subtle distinctions do not show at first sight.

That is extrusion in the highest optical quality.

With more than 70 years of experience in manufacturing extrusion systems for highly transparent film and sheet, you are always on the safe side with BREYER.

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for manufacturing clear sheet  
out of PC, PMMA and PET**

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D-78224 Singen

Germany

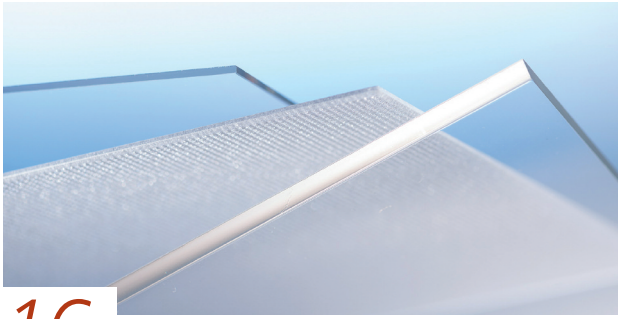
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布勒尔 (BREYER) 制造出第一台挤出机至今已有60多年。从那时起，数百台板片材生产线系统已出口到世界各地。布勒尔挤出生产线成功的最重要因素是机器制造商、原材料供应商和板片材制造商之间的密切合作。

*It's been over 60 years that BREYER built its first extruder. Since then, hundreds of sheet line systems have been exported all over the world. Most important to the success of BREYER Extrusion Lines was a close collaboration of machine manufacturers, raw-material suppliers and sheet manufacturers.*



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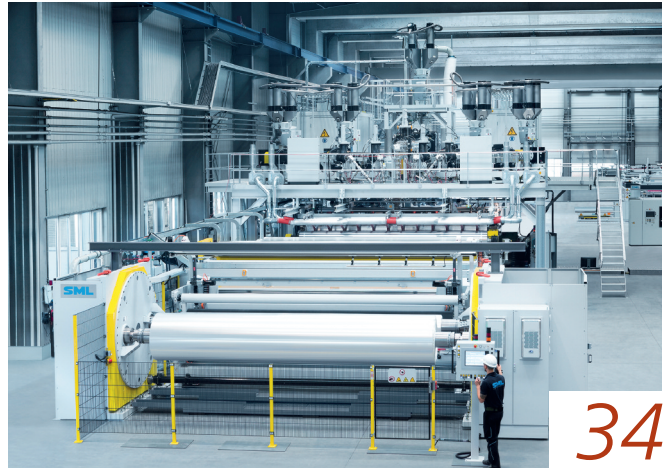
戴维斯-标准在Chinaplas：我们将推广片材、发泡、吹膜、热成型、管道、型材和管材、挤出涂覆和流延膜等方面的全球售后服务和设备技术。

*Davis-Standard at Chinaplas: Global aftermarket services and equipment technology for sheet, foam, blown film, thermoforming, pipe, profile and tubing, cast film, extrusion coating and liquid coating will be promoted.*

回收利用：Pan Era集团采用高技术标准，经过全面的初步测试，决定从奥地利MAS挤出技术公司选购一条回收生产线。

*Recycling: Pan Era Group relies on high technical standards and, after extensive preliminary tests, decided on a recycling line from the Austrian MAS extrusion technology company.*

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SML流延薄膜挤出设备中国区销售经理黄泽峰说：“我们SML认为，连续大批量生产高质量薄膜的可靠设备是先决条件。但归根结底，取得商业成功的最终关键因素是生产效率和低单位成本。”

*"We from SML would say that machinery, that is reliably delivering premium-quality film in constantly high volumes is a prerequisite. But at the end, the final key to commercial success are productivity and low unit costs," says Huang Zefeng, Sales Manager Cast Film Extrusion, China.*



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百旺集团及其旗下品牌--百旺、Penta、Aquatech和Doteco--将在Chinaplas展会上展示完整的集成系统，包括最创新的技术。

*Piovan Group with its brands – Piovan, Penta, Aquatech and Doteco – will be at Chinaplas to display the complete offer of fully integrated systems including the most innovative technologies.*

利用粉碎和团聚技术回收生产废料Herbold Meckesheim。

*Recycling production waste using size reduction and agglomeration technology by Herbold Meckesheim.*



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# EXTRUSION

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### CHINAPLAS 2021

13. - 16. 04. 2021

Shenzhen / PR China 深圳 / 中國

➡ Adsale Exhibition Services Ltd.  
www.ChinaplasOnline.com

### Plastics Extrusion World Expo Europe

01. - 02. 06. 2021

Essen / Germany 埃森 / 德國

➡ <https://eu.extrusion-expo.com/>

### wire Russia, Tube Russia

08. - 10. 06. 2021

Moscow / Russia 莫斯科 / 俄羅斯

➡ [www.wire-russia.com](http://www.wire-russia.com),  
[www.Tube-russia.com](http://www.Tube-russia.com)

### rosplast

15. - 17. 06. 2021

Moscow / Russia 莫斯科 / 俄羅斯

➡ <https://rosmould.ru.messefrankfurt.com/>

### Equiplast 2021

14. - 18. 09. 2021

Barcelona / Spain 巴塞羅納 / 西班牙

➡ Barcelona Messe  
[www.equiplast.com](http://www.equiplast.com)

### interplas

28. - 30. 09. 2021

Birmingham / United Kingdom

伯明翰 / 英國

➡ [www.interplasuk.com](http://www.interplasuk.com)

### Fakuma

12. - 16. 10. 2021

Friedrichshafen / Germany

腓德列斯哈芬 / 德國

➡ P. E. Schall GmbH & Co.KG  
[www.fakuma-messe.de](http://www.fakuma-messe.de)

### interplastica 2022

25. - 28. 01. 2022

Moscow / Russia 莫斯科 / 俄羅斯

➡ [www.interplastica.de/en/](http://www.interplastica.de/en/)

### POWTECH

30. 08. - 01. 09. 2022

Nuremberg / Germany 紐倫堡 / 德國

➡ NürnbergMesse GmbH  
[www.powtech.de](http://www.powtech.de)

## K 2022 – 注册文件已公布

2022年10月19-26日 德国杜塞尔多夫

■ 自即日起，K 2022的注册文件已可下载。对于所有希望参加K 2022展会的公司，其注册截止日期是2021年5月21日。

2022年K展的展出范围包括：机械和设备，原材料、助剂和半成品、技术部件以及增强型塑料制品。2022年10月将是举办业内居首位的贸易展览会的最佳时机，因为全球大流行的病毒也影响和打击了许多塑料和橡胶行业的企业，以及其客户的行业。因此，在国际塑料和橡胶工业中，对于在全球范围内进行人际交流和重新定向有着巨大的需求。

杜塞尔多夫的K展始终能够关注我们当前时代的挑战，尤其是您所在行业所面临的挑战。这就是为什么在2019年K展上可持续性、节约资源、循环经济和数字化等代表发展趋势的主题，也将在参展商的展位和会外活动中成为展会的“热门门票”的原因。这里值得提请重视的是：名为“塑料塑造未来”的特别展览，以及作为科学研究论坛的科学园区。

以下网站可以下载K 2022的注册文件：

[www.k-online.com/2330](http://www.k-online.com/2330)

### K 2022 – Registration Documents Available

19. to 26. Oktober 2022,  
Dusseldorf, Germany

■ With immediate effect the registration documents for K 2022 will be available. The deadline for registration for all the companies wishing to participate in K 2022 is 21 May 2021.

The ranges on show at K 2022 include the segments machinery and equipment, raw materials and auxiliaries as well as semi-finished products, technical components and reinforced plastic products. October 2022 will be the perfect timing for the No. 1 trade fair because the effects of the global pandemic have also hit many enterprises from the plastics and rubber sector as well as their customer industries. Therefore, there will be an enormous demand for personal exchange and re-orientation on a global



scale in the international plastics and rubber industry.

K in Düsseldorf also always addresses the current challenges of our day and age and specifically of your industry. This is why such subjects as sustainability, resource savings, circular economy and digitalisation, which gathered momentum at K 2019, will also feature among the “hot tickets” of the trade fair at both the exhibitors’ stands and side events. Worth a special mention here is the Special Show entitled “Plastics shape the future” as well as the Science Campus as a forum for science and research.

The registration documents for K 2022 can be downloaded from:

➡ [www.k-online.de/2330](http://www.k-online.de/2330)

## 2021 中国国际线缆工业展：扩大合作范围

■ 杜塞尔多夫展览（上海）有限公司及其长期的本地合作伙伴SECRI（上海电缆研究所有限公司）将发挥各自的优势，扩大合作项目的范围：每两年一次的中国国际线缆及线材展（wire China）吸引了全球众多电线电缆行业专家前往上海参展。除此以外，中国国际电线电缆行业展览会（wire show）也将在随后的几年中与领先的亚洲地区展览会wire-China交替举行。2021年的Wire show将于8月31日至9月2日在上海新国际博览中心（SNIEC）举行。该战略联盟的目标是利用我们多年来为国际公司提供的平台来展示电线电缆行业的创新

成果，并在中国市场（世界上最大的增长市场）上更好地定位自己。互动式在线陈列室能够为贸易展览馆中的产品提供数字化支持。这意味着即使由于本国当前的经济形势而无法前往上海，公司也可以参加交易会的活动。

展会的组织者回顾了其成功的历史：上一届Wire Show展会打破了纪录，在第12届Wire Show，吸引了大约15,000名专业观众和400名来自亚洲的参展商。

### WireShow 2021 – Cooperation Expanded

■ Messe Düsseldorf Shanghai and their longstanding regional partner SECRI (Shanghai Electric Cable Research Institute Co., Ltd) have united their skillsets in an expanded cooperative project: In

addition to wire China, which draws numerous international experts from the wire and cable industry to Shanghai every two years, the Wire Show – China International Wire & Cable Industry Exhibition – will also take place in the intervening years, alternating with the leading regional Asian trade fair. The WireShow will be held from **31 August to 2 September 2021**, in the Shanghai New International Expo Centre (SNIEC). The objective of this strategic alliance is to use the platforms that we have had for years for international companies to showcase innovations from the wire and cable industry and to position ourselves even better in the Chinese market, the biggest growth market in the world. Interactive online showrooms are also present to provide a digital boost for what's on offer in the trade fair halls.



[www.wireshow.com](http://www.wireshow.com)

This means that companies can also take part in trade fair events even if they can't travel to Shanghai due to the current economic situation in their own countries.

In the 12th WireShow, the organisers of the event look back at its successful history: The previous event broke records, with around 15,000 professional visitors and 400 exhibitors from Asia.

➔ **Messe Düsseldorf GmbH**  
[www.wireshow.com](http://www.wireshow.com)

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Stand 10J71



## 韩国第一台迪芬巴赫Fiberforge设备

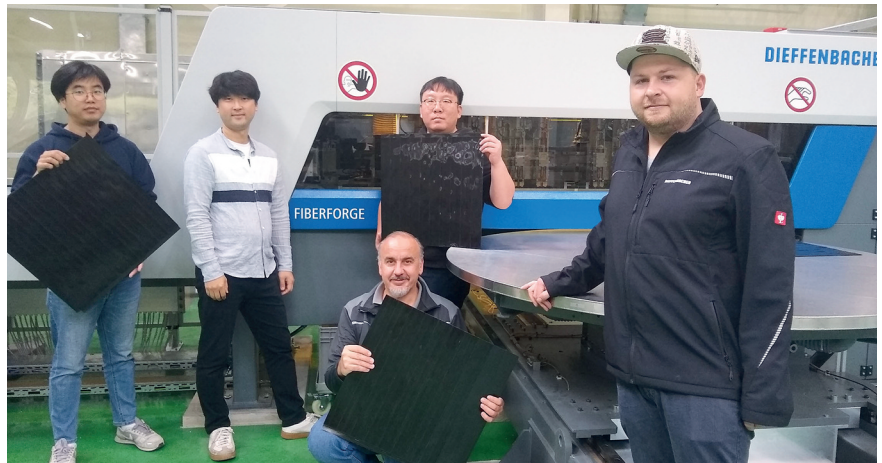
■ 新型Fiberforge带状铺设系统正在帮助韩国蔚山国立科学技术学院 (UNIST) 推进其在汽车和航空航天业领域的研究。UNIST在2019年订购的迪芬巴赫 (DIEFFENBACHER) 带状铺设系统是韩国第一台Fiberforge订单, 10月中旬以来开始使用。带状铺设系统的安装和调试于2020年8月开始, 并于10月成功验收。韩国蔚山国立科学技术学院复合材料研究中心主管Young-Bin Park教授说: “我们主要为汽车和航空航天业的公司开发新的工艺和应用, 正在寻找一种高精度且经济的带状铺设系统。我们在迪芬巴赫找到了它。Fiberforge将我们的研究提高到了一个全新的水平。” 帕克教授补充说: “尽管COVID-19大流行最初在施工现场造成了轻微的延误, 但项目的其它部分却进行得非常顺利。” UNIST项目强调了Fiberforge技术的多功能性。世界上最快的带状铺设系统既适合轻量级组件的批量生产, 又适合新工艺的研究。全世界已有10多个这种系统在生产环境中使用。除UNIST外, 还有其它七个研究机构配备了Fiberforge技术。

### First Fiberforge for South Korea

■ A new Fiberforge tape laying system from DIEFFENBACHER is helping the South Korea Ulsan National Institute of Science and Technology (UNIST) advance its research for companies in the automotive and aerospace industries. In use since mid-October, the tape laying system ordered by UNIST in 2019 was the first Fiberforge order for DIEFFENBACHER in South Korea. The installation and commissioning of the tape laying system began in August 2020. The system was successfully accepted in October.

“We develop new processes and applications, mainly for companies in the automotive and aerospace industries,” said Prof. Young-Bin Park, Head of the UNIST Composites Research Center. “We were looking for a highly precise and economical tape laying system and found it at DIEFFENBACHER. Fiberforge takes our research to a whole new level.”

“Despite the COVID-19 pandemic, which initially caused a slight delay in the start of construction work, the rest of



项目成功地竣工: 项目团队在Fiberforge 加工设备前合影

### Successful project completion – the project team in front of the Fiberforge

the project went absolutely smoothly,” added Prof. Park.

The UNIST project underscores the versatility of the Fiberforge technology. The world’s fastest tape laying system is suitable for both the mass production of lightweight components and research for new processes. More than 10 sys-

tems are in use in production worldwide. In addition to UNIST, seven other research institutes are equipped with Fiberforge technology.

➔ **DIEFFENBACHER**  
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## 获得

■ 英国阿特拉斯转换设备有限公司是一家全球领先的卷材材料分切技术制造商, 该公司与德国康甫公司合并为亚根堡集团工业解决方案部门的一部分。

德国康甫公司和阿特拉斯转换设备有限公司为全球客户提供最先进的技术和广泛的服务, 和经得起未来考验的机器和解决方案。两家公司产品系列的增加以及高素质员工的加入, 以及KAMPF、ATLAS 和 TITAN 三大知名品牌的明确定位, 将进一步增强联合创新能力和解决方案的多样性。

KAMPF、ATLAS 和 TITAN 将继续提供独立的创新解决方案, 并结合全球服务, 为客户的投资提供最高的安全保障。这些公司将在应用和工艺知识以及自动化和数字化方面创造新的质量。

这将通过提供覆盖所有品牌的通用全球服务, 利用其强大的网络和可信赖的资源, 确保已安装机器的长期可用性。该业务将扩大, 包括提高生产力的自动化解决方案和最先进的工业 4.0 应用程序, 从而成为该行业的全球解决方案提供商。

### Acquisition

■ The British company Atlas Converting Equipment Ltd., a worldwide leading manufacturer of slitting technology for web shaped materials joins Kampf Schneid- & Wickeltechnik as a part of the Jagenberg Group Industrial Solutions sector.



Kampf and Atlas Converting Equipment provide future-proof machines and solutions with highest level of technology and extensive services for their global customers. The addition of the product ranges of both companies with their highly qualified employees, as well as the clear positioning of the three renowned brands KAMPF, ATLAS & TITAN will further strengthen the joint innovative power and the variety of solutions. KAMPF, ATLAS & TITAN will continue to

serve independently, innovative solutions combined with worldwide services, giving highest security for their customers investment. The companies will create a new quality in terms of application – and process knowledge as well as automation and digitisation. This will ensure the long term availability of installed machines by offering a common global service that covers all brands, using their strong networks and trusted resources. The business will be expanded by including

productivity-enhancing automation solutions and state-of-the-art Industry 4.0 applications to become the global solution provider for the industry.

- **Kampf Schneid- und Wickeltechnik GmbH & Co. KG**  
www.kampf.de
- **Jagenberg AG**  
www.jagenberg.com
- **Atlas Converting Equipment Ltd.**  
www.atlasconverting.com

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## 出新型500系列橡胶/硅胶挤压十字头

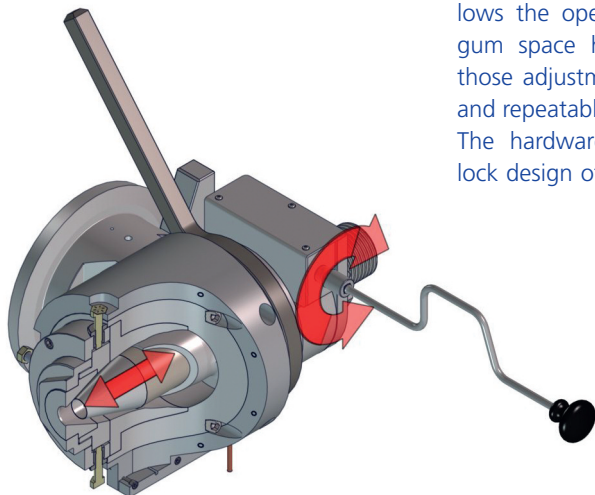
■ Guill Tool推出了具有MAGS胶空间调节系统的新型500系列十字头。500系列专为弹性体化合物的流动特性和独特的加工挑战而设计。Guill推出的这种新型十字头设计的关键特性之一是机械辅助胶空间 (MAGS) 调节系统。新的胶空间调节方法使操作员可以使用普通套筒扳手从单点进行轻松调节。调节胶空间时无需多个螺母和螺栓，这可以缩短调节时间。核心管上的视觉指示灯让操作员能够查看胶空间移动了多远，使调节更加准确且可重复。

Guill推出的新型500系列无需硬件并采用专利凸轮锁设计，无需浪费时间拆卸和重新固定紧固件，便于拆卸和重新组装。只需将凸轮螺母转半圈即可松开并自动从十字头体部取出导流板，这进一步节省了时间。此外，导流板上没有底切，在取出导流板时无需挂起任何材料，从而可以更快、更轻松地清洁和转换。

新型500系列还采用了最新的中央平台同心度调节系统，可显著降低工具压力，可以在不松动端面螺栓的情况下更轻松、更精确地进行同心度调节。用于调节螺栓的易取插件还允许轻松地更换锁定或损坏的调节螺栓，从而进一步减少维修费用并减少宕机时间。

这种新型橡胶/硅胶十字头的另一个创新特点是铸铝液体冷却套管，让用户可以在发生线路阻塞时切换冷却套管，与传统集成冷却系统相比，进一步减少了宕机时间。

Guill 500系列十字头，具有机械辅助胶空间 (MAGS) 调节系统.....专为弹性体化合物的流动特性而设计



带有MAGS胶空间调节功能的新型500系列十字头是大多数现有NRM生产线的直接替代品，但这种十字头设计也可以适应任何挤压机设计或生产线布局。

添加了新设计的流入口通道后，可减少材料加工时产生的剪切力和热量，这有助于降低十字头的压力，使材料以更平衡和均匀流动的方式穿过十字头。

Guill提供的所有十字头都配有用于装配和拆卸的工具套件以及详细的操作员说明书。Guill工程团队可随时协助用户实施和操作新型500系列十字头。

有关具有MAGS胶空间调节系统的新型Guill 500系列十字头的视频，请访问：

<https://youtu.be/jeNovmMtcBs>

### *New 500 Series Rubber/Silicone Extrusion Crosshead*

■ Guill Tool introduces the NEW 500 Series crosshead with MAGS gum space adjustment. The 500 Series is designed specifically for the flow characteristics and unique processing challenges of elastomeric compounds. One of the key features engineered by Guill on this new crosshead design is the mechanically assisted gum space (MAGS) adjustment system. This new method of gum space adjustment allows the operator to make an effortless adjustment from a single point using a common socket wrench. No more need to struggle with multiple nuts and bolts in order to adjust gum space, which leads to faster adjustments. The visual indicator on the core tube allows the operator to see how far the gum space has been moved, making those adjustments much more accurate and repeatable.

The hardware-free and patented cam lock design of the NEW 500 Series from

*Guill Series 500 crosshead with Mechanically Assisted Gum Space (MAGS) adjustment...specially designed for the flow characteristics of elastomeric compounds*

Guill means no time is wasted unbolting and re-securing fasteners for disassembly and re-assembly. Only half of a rotation of the cam nut is required to loosen and automatically extract the deflector from the head body, which is another time saver. Also, with no undercuts on the deflector, there are no material hang-ups when extracting the deflector, allowing for faster and easier cleaning and changeover.

The NEW 500 Series also features the latest Center-Stage concentricity adjustment system that significantly reduces pressure on the tooling, allowing easier and more precise concentricity adjustments without loosening the face bolts. Easy-Out inserts for the adjusting bolts also allow simple replacement of locked or damaged adjusting bolts, which further saves on repair and downtime.

Another innovative feature of this new rubber/silicone crosshead is a cast aluminum liquid-fed cooling sleeve that allows the user to switch out the cooling jacket in the event of a line obstruction, again reducing downtime compared to traditional integrated cooling systems.

The NEW 500 Series crosshead with MAGS gum space adjustment is a drop-in replacement on most existing NRM lines, however this crosshead design can also be adapted to fit any extruder design or line layout.

The addition of a newly designed flow inlet channel reduces the shear and heat that is generated as the materials are being processed. This leads to lower head pressures allowing the material to move through the head in a much more balanced and even flow.

All crossheads supplied by Guill are furnished with a tool kit for assembly and disassembly as well as a detailed operator's instruction manual. The engineering team at Guill will gladly assist users in the implementation and operation of the NEW 500 series crosshead.

For a video of the NEW Guill 500 Series crosshead with MAGS gum space adjustment, please go to:

<https://youtu.be/jeNovmMtcBs>

## 中国子公司成立 25 周年

■ 德国考特斯机械制造有限公司在中国南部城市顺德设立挤出吹塑设备生产基地迄今已有25年。顺德工厂的设立旨在更加贴近客户，更快响应亚洲包装市场对机器、备件及维修服务的需求。顺德工厂于今年年初扩充了厂房，并于3月下旬正式启用新仓库、新质检车间及新机器组装车间，提升产能，加快产品交付速度。11月初，考特斯诚邀广大客户和合作伙伴前来顺德参加考特斯中国25周年庆典活动。

位于广东省佛山市顺德区的考特斯机械科技（佛山）有限公司是德国考特斯机械制造有限公司在中国的全资子公司，成立于 1995 年。目前考特斯在中国约有 170 名员工。

今年，考特斯集团除庆祝中国子公司成立 25 周年外，同时还庆祝德国总公司成立 85 周年以及美国子公司成立 60 周年。塑料业先驱 Reinhold Hagen 于 1935 年创立了考特斯。凭借不懈的实验精神和出色的创业技能，1949 年 Reinhold Hagen 成功研发出全球第一个无缝制造塑料中空容器的标准的商用系统。

### 25 Years of Machine Production in China

■ Kautex Maschinenbau has been operating a production plant for the manufacture of extrusion blow molding machines in the southern Chinese city of Shunde for 25 years. The presence of this plant means greater proximity to customers and quicker response times for machines, spare parts and service requirements in the Asian packaging market. The company invited customers and partners to an "open house" celebration in Shunde at the start of November to mark the anniversary. Manufacturing capacity there was recently increased to enable even quicker deliveries. A new extended warehouse for spare parts was built in conjunction with the expansion. Kautex in the southern Chinese region of Guangdong is a 100% subsidiary of Kautex Maschinenbau GmbH and it was founded in 1995. Kautex employs around 170 people in China. As well as celebrating a 25th anniversary in China this year, Kautex is also celebrating the 85th anniversary of its original




(© Kautex Maschinenbau GmbH 2020)

founding in Germany and 60 years of branch establishment in the USA. Plastics pioneer Reinhold Hagen founded the company in 1935. The combination of his passion for experimentation and entrepreneurial aptitude enabled him to succeed in developing the world's first

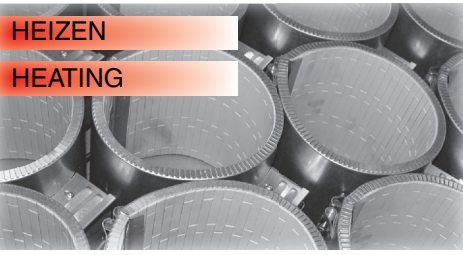
standard commercial system for the seamless manufacture of plastic containers in 1949.

➔ Kautex Maschinenbau GmbH 2020  
www.kautex-group.com

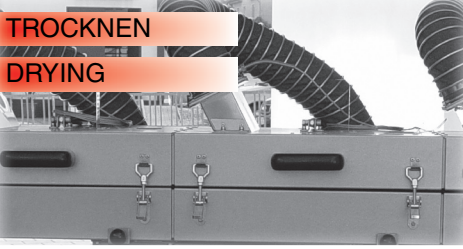


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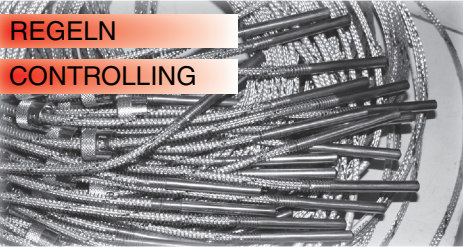
HEIZEN  
HEATING



TROCKNEN  
DRYING



REGELN  
CONTROLLING



ERGE  
ELEKTROWÄRME  
TECHNIK FRANZ  
MESSER GMBH

## 在越南扩大浓缩色母料生产能力

■ Avient公司是领先的设备系统和供应商，业务范围包括专用和可持续发展的材料。这家公司将对位于越南平阳省的色母料工厂现有生产能力加以扩展。对于那些寻求独特色彩解决方案的本地客商来说，此举将加快交货速度并提升服务水平，增强了高质量的最终产品的美观度和吸引力。

Avient公司色母料与添加剂亚洲部副总裁兼总经理Say-Eng Lee指出：“对塑料的需求已成为越南经济增长最快的领域之一。随着消费的增长，对顶级色母料的需求也越来越具有挑战性，因为顶级品牌专注于新颖的色母料解决方案。我们将生产空间增加了30%以上，并增加了一系列当前最先进的生产设备，以缩短高质量色母料的开发和生产交货时间。这样，本地客户将受益于高效而灵活的机构以及随之而来的专业方面的技术支持。此外，我们可以对客户加快开发时间的要求予以迅速回应，帮助他们缩短产品上市时间。”

根据《越南经济新闻》的报道，越南的塑料工业目前正以每年16至18%的速度增长，其主要应用领域包括包装、建筑和电子行业。Avient增强了对浓缩色母料的本地化颜色匹配能力，将以始终如一的颜色质量，特殊效果创造性的应用，以及独特的颜色为中高端市场提供支持，从而提高产品的吸引力并满足品牌要求。通过扩产，Avient还将缩短本地色母料颜色匹配的交货时间。

值得注意的是，Avient的可持续发展浓缩色母料还可以支持那些鼓励塑料废物回收和再利用的国家加快步伐。例如，使用可回收的CESA™IR添加剂（使黑色塑料能够被识别为可回收利用）可以减少深色包装对环境的影响。

Avient最近还通过在意大利新成立的CycleWorks创新中心正式开业，加强了其全球承诺，并帮助客户应对和克服塑料回收所面临的挑战。新中心将致力于促进合作伙伴关系和强化新技术，以进一步增强回收利用的生存能力。

Avient还为可生物降解的塑料PLA, PHA, PHBV, PBS, PBAT和这些材料的特殊混合物提供浓缩色母料，而不会损害这些增强有机树脂的可回收性。

### Expansion of Color Concentrate Capabilities in Vietnam

■ Avient Corporation, a premier provider of specialized and sustainable material

Avient 扩大其浓缩色母料在越南的生产能力

Avient to Expand Color Concentrate Capabilities in Vietnam  
(Photo: Avient)



solutions and services, will complete an expansion of existing production capabilities for color concentrates at its Binh Duong site in Vietnam. The move will improve speed-to-market and service level for local customers seeking unique color solutions to enhance aesthetics and appeal of high-quality end products.

“Demand for plastics has become one of the Vietnam economy’s fastest growth areas,” says Say-Eng Lee, vice president and general manager, Color & Additives Asia for Avient. “As consumption grows, requirements for high-quality color concentrates are becoming more challenging as well, as top brands focus on novel color solutions. We have increased our production space by over 30 percent and added to our state-of-the-art machinery portfolio to shorten lead times for developing and producing high-quality color concentrates. As a result, local customers will benefit from an efficient and agile setup, along with expert technical support. In addition, we can be more responsive in accelerating customer development times and help them to reduce time to market.”

According to Vietnam Economic News, Vietnam’s plastics industry is currently experiencing an annual growth rate of 16 to 18 percent, with key segments including packaging, construction and electronics. Avient’s enhanced local turnaround for color concentrates will support middle to high end markets with consistent color quality, creative application of special effects, and unique colors to enhance product appeal and match branding requirements. With the expansion, Avient will also improve lead times for color matching locally.

Notably, Avient’s sustainable color concentrates can also support steps within the country to encourage plastic waste

recycling and reuse. For example, the use of recyclable CESA™ IR additives, which enable black plastics to be identified for recycling, can reduce the environmental impact of dark colored packaging. Avient also recently strengthened its global commitment to help customers tackle and overcome the challenge of plastics recycling with the official opening of its new CycleWorks Innovation Center in Italy. The new center will focus on facilitating partnerships and enhancing new technologies to further the viability of recycling.

Avient also offers color concentrates for biodegradable plastics PLA, PHA, PHBV, PBS, PBAT and special blends of those materials, which do not compromise the organic recyclability of the resins they enhance.

► Avient Corporation  
www.avient.com

## 通过数字孪生实现设备系统无缝调试

■ 复杂应用程序和生产系统的调试通常需要几天甚至几周，调试期间设备必须停机，导致大量的停机时间。虚拟开发和测试环境可以大大加快现场实施的速度。

针对西班牙一台KBB400D吹塑成型设备后加工站的周期时间优化，考特斯变更了设备的系统控制。全新的系统控制最先在考特斯的德国波恩工厂开发，并在虚拟的后加工站（IntelliGate模块）上进行测试，最后再由技术服务人员前往西班牙客户的生产基地进行现场调

试。通过虚拟接入的程序员会为现场的工程师提供支持。整个现场调试和最终调整过程只需要一天。仅仅花费原计划的一半时间，设备系统即可再次启动。

考特斯的项目经理 Dirk Hiller 认为这一方法具有巨大的潜力：“我们采用仿真的方法在虚拟系统上预先进行调试和测试，不仅减少了现场实施的时间和人员需求，机器数字孪生更意味着我们能够更快更好地使生产设备的控制系统适应不断变化的生产条件和生产要求。”

通过数字孪生实现设备系统无缝调 (© Kautex 2021)

*Seamless commissioning of systems thanks to optimal preparation on the digital twin (© Kautex Maschinenbau GmbH 2021)*

now in a better position to adapt the control of the production system to changing conditions and production requirements more quickly."



➔ Kautex Maschinenbau GmbH  
www.kautex-group.com

### Seamless Commissioning of Systems Thanks to Optimal Preparation on the Digital Twin

■ The commissioning of complex applications and production systems often takes several days or weeks and is associated with considerable downtimes in which the system has to be taken out of production. Virtual development and testing environments can speed up the implementation on site considerably.

The change in control was the optimization of the cycle time on the post-processing station of a Kautex KBB400D blow molding machine in Spain. The new control change initially developed in the Kautex factory in Bonn and tested on a virtual post-processing station (IntelliGate module). It was only then that the commissioning at the customer's production location in Spain was carried out by a service technician on site. The service technician received support from a virtually linked Kautex programmer. The complete process on site with commissioning and final adjustments took only one day. It was therefore possible to restart the system after just half the amount of time that was originally calculated.

Project manager Dirk Hiller of Kautex sees a great deal of potential in the process: "The simulation process which we use for pre-commissioning and testing on virtual Kautex systems reduces time and staffing requirements for the implementation on site. Digital twinning of our machines means that we are

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## 一品质见于点滴

基于对技术的不断追求，SIKORA 团队推出了前瞻性的在线和离线检测、分析及分拣系统，用于塑料颗粒的在线和离线质量保障，PURITY SCANNER ADVANCED 是其中一款产品。

- 在线检测并自动剔除含有杂质的颗粒
- 可对颗粒表面及内部小至 50 μm 的金属、有机污染物以及交叉污染颗粒杂质进行检测
- 专业的数据分析管理 (PDAM) 系统，可提供统计学数据、可视化趋势图并记录数据

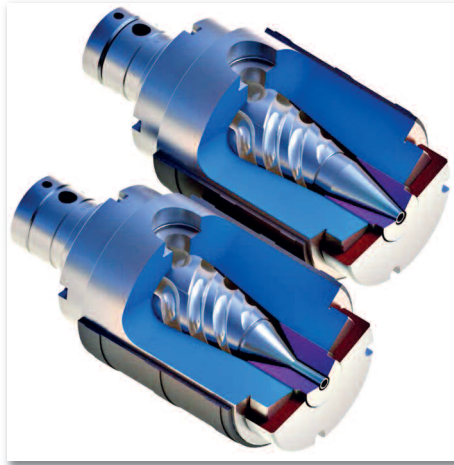
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# “BULLET II”挤压头

## “THE BULLET II” Extrusion Head

GuillTool在2015年推出了Bullet®。根据公司提供的消息，这是一种带有固定中心设计、多端口螺旋流动设计和齿隙调整的新型挤出头，而且没有紧固件，因此比目前上市的任何常规挤压头都更容易、更快捷地清洁和重新启动。今天，公司宣布推出新一代的独特专利工具Bullet II。



Bullet II可快速更换（从设备后面拆除端头，从前面拆除模具）。如同Guill开创的锥体和偏转器设计，无紧固件的设计可以避免泄漏。此外，正在申请专利的CAM LOCK®偏转器固定系统为挤出机和机器制造商提供了以下其他优势：

- 只需旋转CAM LOCK®半圈即可拆除和安装偏转器和端头
- 不需要紧固件
- 可快速更换，具备带螺纹的模具固定环和带螺纹的端头固定器
- 从前面拆除模具，从后面拆除端头
- 工具固定器还提供齿隙调整功能
- 无障碍空气/真空连接
- 简化清洁过程
- 减少宕机时间并降低运营成本

该挤出头适合高加工量和低加工量应用，而且只需简单地更换一个部件即可。可提供一系列十字头设计，用户可以指定“口径”，即最大模具内径。

该设备配有一个真空室和用于装配和拆卸的套件。可选的键控工具功能为机器设计人和终端用户提供快速定位，因此，整体设备设计可实现更快的拆卸、适当的清洁和重新启动，从而提高生产线的盈利性和效率。

如需观看这种新设计的展示视频，请访问：  
<https://www.youtube.com/watch?v=MpEdmCRtaqg>

*Guill Tool introduced The Bullet® in 2015, a new extrusion head with fixed center design, multi-port spiral flow design and gum space adjustment, plus the added feature of no fastening hardware, so cleaning and restart are easier and faster than any conventional head on the market currently, according to company sources. The company announces the next generation of this unique and patented tool, The Bullet II.*



Bullet II的照片，显示无紧固件，即没有螺母和螺栓，因此更容易拆卸、清洁和重新启动

*Photos of The Bullet II, showing the absence of hardware, i.e. nuts and bolts, so disassembly, cleaning and restart are made easier*



The Bullet II allows quick tooling changes, as the tips remove from the back and the die removes from the front of the unit. The absence of fastening hardware eliminates leaking, as does the taper body and deflector design pioneered by Guill. Additionally, the new patent pending CAM LOCK® deflector retaining system offers these additional benefits to extruders and machine builders:

- It only takes ½ turn of the Cam Lock® to remove and install the Deflector and Tip
- No fastening hardware required
- Fast tool changes, threaded retaining ring for the die and threaded tip retainer
- Dies are removed from the front and tips from the rear
- Tooling retainers also provide gum space adjustment
- Hassle free air / vacuum connections
- Simplified cleaning
- Reduces downtime and lowers operating costs

High- and low-volume applications are suitable for this head and are accommodated with the simple, easy changing of just one component. A family of crosshead designs is available and users can specify the "caliber", that is, the max. die ID.

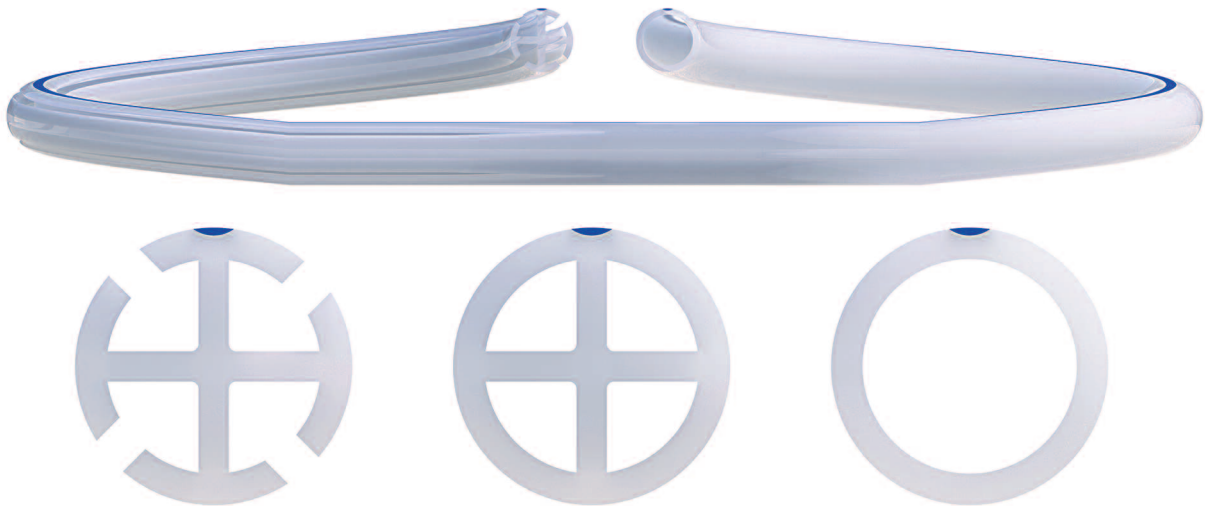
A vacuum chamber and kit for assembly and disassembly are included with the unit. Optional keyed tooling capability offers

machine designers and end users quick orientation, so the overall unit design enables faster disassembly, proper cleaning and restart, allowing the line to become more profitable, more quickly. For a video demonstrating this new design, please visit:

[www.youtube.com/watch?v=MpEdmCRtaqg](http://www.youtube.com/watch?v=MpEdmCRtaqg)

## Guill推出往复式挤出模头

### *Reciprocating Head Introduced*



#### 自动挤压流程显著改变了挤压工艺

往复式模头大幅度改进了自动化挤出工艺，挤出外形可变化服务全球的挤出模具制造商Guill Tool已经发布了它的新型往复式模头，用直线往复运动组件替代传统的固定顶尖式模具，能够在给定的长度内更改管材的外形，可以根据挤出生产线的速度对管材进行切断。在生产不同外形的管材时，这种工艺只需要一次开机反复进行生产，挤出过程不会中断。降低了成本和减少了有耗费的工作，同时质量得到了提高。切断功能与挤出速度相关联，将最终产品切割成所需的长度。相反，传统方法需要采用手工操作多次更换模具来挤出外形不同的管材。Guill的新型往复式模头组件减少了装配操作，同时降低了在制品库存。不需要储存各种不同形状的管材以及为完成订单所需的装配连接件。此外，往复式模头减少了连接件，能够实现准时化生产和完全按照订单生产。最终，减少了从接受订单到发货所需要的总的时间

若希望获取更多资讯，

#### *Automated extrusion process drastically changes the extruded profile*

Guill Tool, a global manufacturer of extrusion tooling, has released its new reciprocating head. The traditional tip and die assembly is replaced with a linear reciprocating assembly that changes the tube's profile within a given length. This process is repeated throughout a single extrusion run without interruptions. Cutting capability, in association with the extrusion speed, cuts the finished product to length.

While cost and value stream activities are reduced, quality is improved. Only one extrusion run is needed to produce a finished product, as opposed to multiple extrusion runs with tooling changes along with a manual assembly operation to connect different tubing shapes. Guill's new reciprocating head eliminates an assembly operation. It also eliminates in-process inventory. Thus, there is no need for storage of various tubing shapes and connectors needed for assembly, fulfillment of orders and replenishment of finished goods.

Furthermore, the reciprocating head eliminates a connecting piece, allows JIT production and products made-to-order. Lastly, it reduces total run time from receiving the order to shipping.

#### ► Guill Tool & Engineering

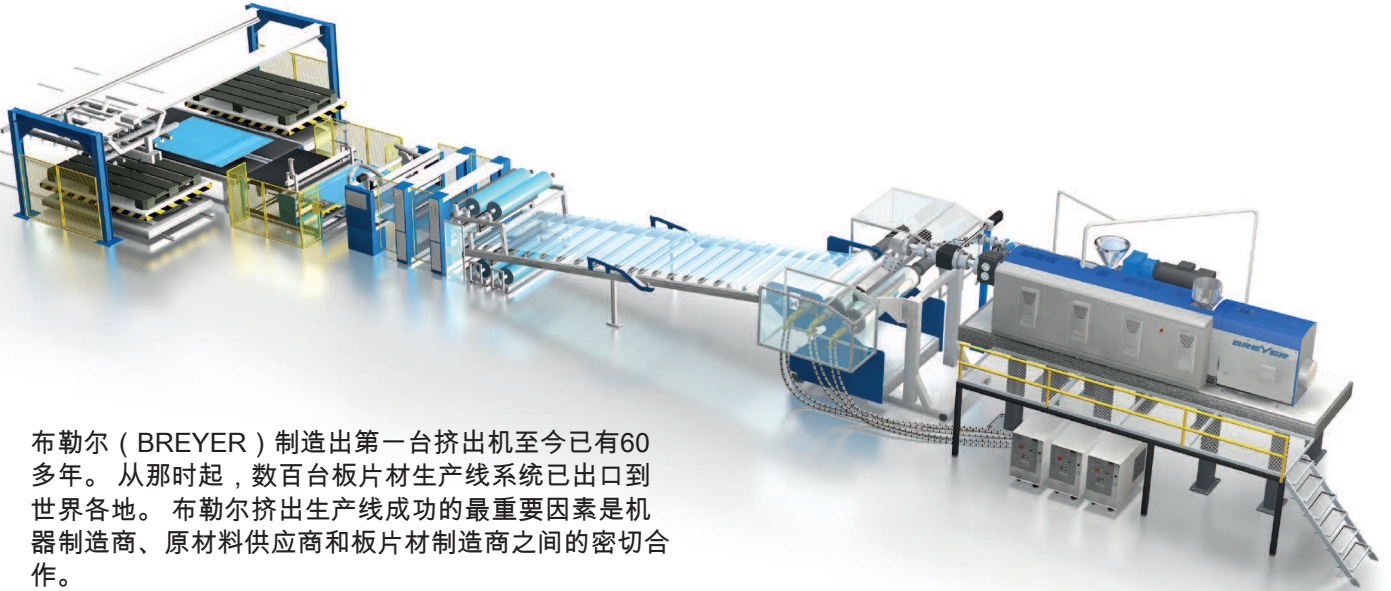
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# 成功挤出透明片材需要多功能设备

## Sheet and Film Extrusion: Successful Extrusion of Clear Sheet Needs a Multi Tool



布勒尔 (BREYER) 制造出第一台挤出机至今已有60多年。从那时起, 数百台板片材生产线系统已出口到世界各地。布勒尔挤出生产线成功的最重要因素是机器制造商、原材料供应商和板片材制造商之间的密切合作。

*It's been over 60 years that BREYER built its first extruder. Since then, hundreds of sheet line systems have been exported all over the world. Most*

采用这种方式, 开发出了大量技术成果和专有技术, 从而确保了客户能够高效而灵活地制造产品。在透明板片材领域中, 客户生产出了全球最高质量的产品, 并通过一流质量的产品占领了新兴的市场。透明片材的应用范围非常广泛。一方面, 是应用于大型建筑物和大型体育场馆等建筑物, 以及温室屋顶和机器设备的罩盖, 另一方面是应用于电视机和计算机屏幕、手机和用于照明的LED面板等高度精致的应用。最近, 产品应用范围中又添加了新的用途: 用于办公室、酒店接待处和超级市场的人身保护片材。为了向所有这些不同的市场和应用提供板片材产品, 挤出生产线必须成为多功能设备。

### 高性能排气挤出机

为了使生产线获得良好的经济效益, 板片材生产线从具有出色性能的单螺杆排气挤出机开始。作为该领域的先驱, 布勒尔完全可以采用很高的额定产量成功地加工吸湿性原料, 而无需对原料进行预先干燥。这样, 耗时和耗能的预干燥工艺变得过时了。

与基于预干燥技术的传统生产工艺相比, 排气挤出可以大大减少与原料特性有关的转换时间。因此, 整个挤出生产线可以更加灵活、更为高效地运行。所有的布勒尔挤出生产线都能采用免预干燥的排气挤出工艺, 加工高质量的PC、PMMA和PETG板片材, 甚至是光学应用的薄膜。熔体

*important to the success of BREYER Extrusion Lines was a close collaboration of machine manufacturers, raw-material suppliers and sheet manufacturers.*

将进行最佳脱气, 这是生产满足全球市场最高质量要求的一流片材和薄膜的前提。

### 一台研光机, 可加工三种不同表面类型的板片材

为了服务于整个市场, 该产品线能够生产三种不同类型表面的板片材: 亚光和结构化板片材以及具有光学特性的双面抛光板片材。得益于第一根辊和中间研光机辊的快速更换装置, 该机器可以快速转换, 生产出不同表面类型的板片材。这样, 机器变得高度灵活。根据总产量 (kg / h) 的不同, 可提供具有不同压辊直径的三辊式和四辊式研光机。

### 快速调整平面度

片材的平整度至关重要。借助布勒尔研光机及其可回转的第三研光机, 这一调整不再需要花费很多时间。通过该功能, 片材在中心压延辊周边的停留时间可调节。在生产线运行状态下, 可以改变第三辊相对于中心辊的位置。精确调整到该位置, 研光机置上侧和下侧冷却得到平衡, 膜片变得平整。

### 从一种厚度快速变更为另一种厚度

只需更改触摸屏上的挤出速度 (在压力控制模式下), 布勒尔间隙控制系统即可精确、快速地调节压辊间隙, 特别是对于较薄的片材。操作员根据新的产品厚度更改触摸屏上



的挤出速度值，可在几秒钟内将产品设置到所需的厚度。与传统的间隙调整系统相比，这种功能在时间和成本方面具有明显的优势，传统方式要求操作员在实施间隙调整后再次进行速度调整。

布勒尔提供完整的挤出系统，包括称重计量给料系统、切边锯和横切锯以及堆码系统。整个控制系统符合最新标准，而布勒尔 e-Portal 为操作员提供了各种在线支持解决方案。所有上述的这些特征使布勒尔挤出生产线成为真正的多功能设备，并使操作员能够采用经济而灵活的方式生产板片材。

A lot of details and know-how was developed this way, inuring to the benefit of the customers' efficient and flexible production. In the range of crystal-clear sheets customers produce worldwide highest quality, capturing new markets with first-class products.

Meanwhile, the range of application for transparent sheet is huge. Architectural applications like huge buildings and giant stadiums, green house roofs and machine coverings on the one side and high sophisticated applications like TV and computer screens, mobil phones and LED panels for illumination panels on the other side. Recently another application has been added to the picture: Sheet for the personal protection in offices, hotel receptions and supermarkets.

To produce sheet for all this different markets and requirements the extrusion line must be like a multi tool.

### **High performance on vented extruders**

To have also a good economical production result, the line starts with a vented single screw extruder with outstanding performance.

As a pioneer on this field BREYER even successfully managed to process hygroscopic materials at high specific throughputs without the necessity of pre-drying the material. This way the time- and energy consuming pre-drying becomes obsolete.

Changeover times related to material properties significantly can get reduced compared to conventional processes based on pre-drying technology; hence the entire extrusion line can get operated far more flexible and significantly more efficient.

All BREYER extrusion lines processing high quality PC, PMMA and PETG sheet or even films for optical application do follow the undried and vented process. The melt will become optimally degassed, a precondition for the production of first class sheet and films meeting highest quality demands of the worldwide market.

### **One calender for 3 types of sheet surface**

To serve to the whole market the product line is able to produce three different kinds of sheet: mat and structured sheet as well as both side polished sheet with optical properties.

Thanks of the quick-exchange-device of the first and center ca-

lender roll, the machine can be fast converted for different types of sheet. In this way the machine becomes highly flexible. Depending from the total output (kg/h) the calenders with three and four rolls with different roll diameters are available.

### **Quick adjusting the flatness**

Flatness of the sheet is essential. By the BREYER calender with its slewable third calender roll is not anymore a matter of many minutes. By this feature the residential time of the sheet around the center calender roll is influenced. During running condition the position of the third roll in relation to the center roll can be changed, resp. adjusted exactly to this position where top and lower side cooling is balanced and the film becomes flat.

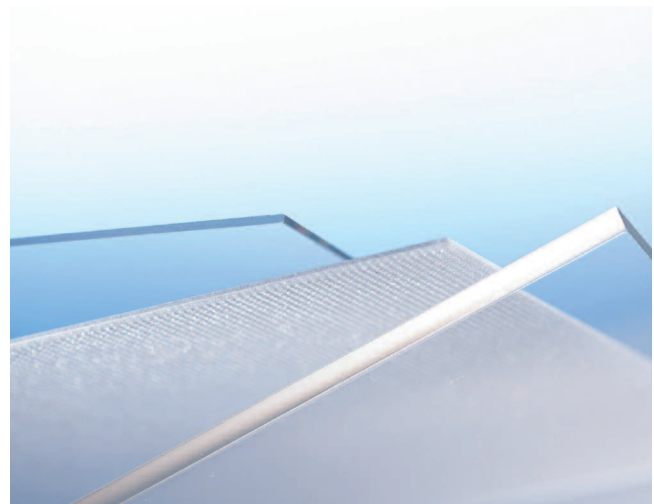
### **Changing quick from one thickness to another**

The BREYER gap control system allows a precise and fast adjustment of the gap, simply by changing the extrusion speed at the touchscreen (pressure control mode) especially for thinner sheet. The operator changes the speed value on the touch screen in accordance with the new product thickness, and within a matter of seconds the product is set to the desired thickness. This is a clear advantage in terms of time and costs compared with conventional gap adjustment systems, which require the operator to adjust the speed separately, after the gap adjustments have been implemented.

BREYER offers the complete extrusion system including gravimetric dosing systems, side-trim saws and cross-cut saws as well as stacking systems.

The entire control system is according the latest standard, and the BREYER e-Portal offers different online support solutions for the operator.

By all this described features the BREYER extrusion line becomes a real multi tool and allows the operator to set up an economically and flexible sheet production.



## 投资于奥地利回收技术

# Recycling: Investment in Austrian Recycling Technology

尽管塑料已经大规模使用了100多年，但与金属，玻璃或纸相比，它们只是半信半疑地被认为是值得回收的有价值的材料。使用后的塑料产品最终经常在填埋场或焚化厂中消失。只有在认识到塑料制品具有如此高的质量和耐用性，而且直到它们最终被填埋或焚化之前不会自行消失，这才引起了人们的重新思考。印度尼西亚的情况也是如此，Pan Era集团专业从事聚乙烯的回收利用，以及采用回收物料制造手提袋和包装袋。Pan Era集团采用高技术标准，经过全面的初步测试，决定从奥地利MAS挤出技术公司选购一条回收生产线。

*Although plastics have been used on a larger scale for more than 100 years, they are, in contrast to metals, glass or paper, only very hesitantly perceived as valuable materials that are worth recycling. Too often, plastic products end up after use in a landfill or in an incineration plant. Only the realization that plastics are of such high quality and durable that they do not disappear on their own when they end up in the environment has led to a rethink. This is also the case in Indonesia, where the Pan Era-Group has specialized in the recycling of polyethylene and the manufacture of carrier bags and packaging bags from it. Pan Era Group relies on high technical standards and, after extensive preliminary tests, decided on a recycling line from the Austrian MAS extrusion technology company.*

印尼家族企业Pan Era集团总部位于雅加达北部，是活跃于多个业务领域的集团公司，其业务之一是回收消费后的塑料废料，并将其加工成薄膜产品。该公司的成立可以追溯到1989年，当时它的创始人开始粉碎和洗涤多种类型的塑料废料，成为该领域的早期参与者之一。该公司随后开始生产回收再生料粒子，随后在1997年开始生产由回收再生原料制成的塑料购物袋和包装膜。从那时起，该公司坚持自己的宗旨，一直使用回收再生原料。迄今为止，Pan Era集团生产和销售的塑料袋中有95%以上是使用至少80%的回收再生原料制成的。集团公司已取得了市场领先地位，并且产品成为市场上最抢手的产品之一。这表明该集团对回收工艺拥有出色的知识，并且对质量有高度的重视。

经过多年的持续增长，该公司于2011年将生产扩展到了西瓜哇省的Cikarang。生产迅速增长，并且在几年内，该集团几乎所有产能都已经饱和。正如Pan-Era总监Wilson Pandhika所确认的：目前这里的生产设施是该地区最负盛名的回收工厂之一，受到了许多来访者的好评。（图片1）该集团目前正在实施一个迄今为止最雄心勃勃的增长计划，这就是在位于距印度尼西亚首都雅加达约一个半小时车程的Cikande建立另一家塑料回收厂。新工厂预计将成为东南亚最大的聚乙烯回收工厂之一。（图2至4）。正是在这个新地点，Pan Era集团依托奥地利的回收技术，订购了一条MAS制



图1：董事Wilson Pandhika是集团加工部门的领导人，该部门是东南亚领先的回收公司之一（图片：Pan Era）

*Picture 1: Director Wilson Pandhika is heading the Pan Era Processing Division, which is among the leading recycling companies in South-East Asia (Photo: Pan Era)*

造的ES混炼挤出生产线。这条生产线的产量为每小时1000千克PE。

### MAS挤出技术的“优势”：温和地塑化聚合物

MAS代表着创新的挤出技术，特别是在同向旋转锥形双螺杆挤出机方面。挤出机有六种规格，从每小时产量10公斤PE的MAS 24实验室挤出机直到每小时产量2,000千克以上的高性能挤出机。配套的CDF熔体过滤器采用旋转圆盘过滤，具有非常高的效率。DRD离心清洁剂可对输入物料进行预处理，特别是用于处理干燥和无水分离固体原料。

以MAS同向旋转锥形双螺杆挤出机所具有特殊的性能特点为基础的生产线非常适合于完成复杂的回收和混炼任务。生产线显著的特点是：在相对较低或中等的熔体压力及剪切水平下获得均匀的塑化效果，对产品的物理特性的测量结果证明了这一点。对产品的分析表明：经过加工后的物料，其质量保持在最高水平，这对于回收利用和混炼应用至关重要。得益于螺杆的模块化结构，用户可以通过更换单个螺杆元件，轻松而快速地精细调整螺杆，直至适合于完成特定的任务。另一个优点是挤出机系统配备的特殊大进料口，这有利于具有低堆积密度的物料的喂料，例如在回收薄片或纤维状物料以及混炼技术中的粉状添加剂。

图3：Pan Era薄膜包装袋生产的总体图（图片：Pan Era）

Picture 3: General view of the Pan-Era production of film packaging-bags (Photo: Pan-Era)



### MAS-ES混炼机，通过排气段进行多级熔体清洁

在Pan Era Group的项目规范中，最高端的一项功能是具有进一步加工生产出多种颜色的无微粒HDPE的能力，产品适合于制造新型高质量包装薄膜或用于包装各种洗涤剂及其他日用化学品的瓶子。

MAS的区域销售经理Juergen Morosz表示：“面临的挑战是根据投入物料的成分和污染程度对其进行正确评估，并对加工所需的系统进行设计。在与客户的紧密合作下，经过一系列代表性的材料测试，我们找出了一种工艺技术解决方案，可以最佳地发挥MAS挤出机的潜力。理想的解决方案是源自于我们独立的ES混炼挤出机逐级串联组成的系统。系统包括一台单螺杆挤出机，用于熔融和塑化经过洗涤和干燥后的PE薄片，以及紧随其后的我们供货计划中的CDF 500-D双盘式过滤器单元，细度为130 $\mu$ m的颗粒在这里被分离并隔离。然后，通过侧进料方式，清洁的熔体流入MAS锥形双螺杆挤出机进料区。此时，熔体还不够清洁。其中仍有印刷油墨残留和气味散发。为了消除这些污染物，我们在双螺杆挤出机的特大的进料口处增设了一套真空装置，并使其成为排气区。在这一区域，熔体中挥发性成分可以有效地排出。从这里，聚合物熔体被继续输送，并被温和地压缩和均匀化，直到最终到达第二个脱气区域，并进行第二次清洁（图5）。熔体经过流动指数测量站后，最终到达造粒单元。”

作为额外的收获，系统还提供理念上的混炼功能，该功能实际上用于实现回收聚合物的高度均质化。由于它是ES混炼系统的核心属性，因此有意将其用于扩展材料的应用范围，经过混炼的材料可用于有技术要求的用途。为实现这一点，MAS双螺杆挤出机的进料区只需加装真空装置，通过真空装置可以添加粉状添加剂（例如滑石粉或碳酸钙），而无需额外的侧进料器。这意味着Pan Era集团将有可能性扩大回收HDPE的应用范围，使其应用范围包括满足技术应用要求的多样化材料。

图2：Pan-Era 集团采用一步法工艺生产无颗粒品质的HDPE不同颜色的彩色粒子，可用于生产新型高质量包装膜（图片：Pan Era）

Picture 2: Pan-Era Group produces in a one-stage-process particle-free HDPE-qualities in different colors, suitable for producing new high quality packaging films (Photo: Pan Era)



The Indonesian family company Pan Era Group with its headquarters in North Jakarta is a group of companies active in multiple business sectors, one of them is the recycling of post-consumer plastic waste and processing it into film products. The founding of the company dates back to 1989 when its founder started grinding and washing several types of plastic waste, becoming one of the early players in this field.

The company then progressed to producing recycled pellets and subsequently, in 1997 it then started producing plastic shopping bags and packaging film made from recycled material. Ever since, the company has stayed true to its roots and has always used recycled material. To date, more than 95% of the plastic bags produced and sold by Pan Era Group are made using at least 80% recycled content. And it has achieved a market leader position, and is one of the most sought-after products on the market. This indicates that the group possesses excellent knowledge of the recycling process as well as firm dedication to quality.

Following years of continued growth, the company then expanded to Cikarang in the province of West Java, in 2011. Production quickly ramped up and within several years, the group has already used up almost all of its capacity. Currently this facility is one of the most prestigious recycling plants in the region, drawing praise from many of its visitors, as Pan-Era Director Wilson Pandhika confirms. (Picture 1)

The group is now progressing on one of its most ambitious growth steps so far, which is the establishment of yet another plastic recycling plant in Cikande, about one and a half hours drive from the Indonesian capital of Jakarta. The new facility is projected to be one of the largest Polyethylene recycling plants in South-East Asia. (Picture 2 to 4). It is at this new location that Pan Era Group relies on Austrian recycling competence and has ordered an ES-compound extrusion line with an output of 1000 kg PE per hour from MAS.

### The "plus" of the MAS-extrusion-technology: The gentle polymer plasticization

MAS stands for innovative extrusion technology, especially the conical twin-screw-extruders with co-rotating screws. They are

available in six sizes, from the MAS 24 laboratory extruder with an hourly output of 10 kg PE up to the high-performance extruder with an output of more than 2,000 kg/h. The range is supplemented by the CDF-melt-filters with very efficient, rotating disc filters and the DRD-centrifugal-cleaners for the pre-treatment of input materials, especially for drying and the waterless separation of solids.

Based on the co-rotating screws, the conical MAS-extruders offer a specific property profile that makes them ideal for complex recycling and compounding tasks. Outstanding is the very uniform plasticization at a comparatively low to medium pressure and shear level, documented by measurements of the physical product characteristics. Their analysis show that the qualities of the input material stay at maximum after processing which is of decisive importance for both recycling applications and compounding tasks. Thanks to their modular structure, the screws can be easily and quickly fine-tuned to a specific task by exchanging individual screw-segments.

Another advantage is the system-specific large feed opening on the extruder, which favors the feeding in of material with a low bulk density, such as recycling flakes or fibrous and powdery additives in compounding technology.

#### **MAS-ES compounder for multi-stage melt cleaning by means of degassing**

High up on the Pan Era Group's project specification was the ability to produce in an one-stage-process a particle-free HDPE in different colors, suitable for producing new high quality packaging films or various bottles for detergents or other household chemicals.

The area sales manager of MAS, Juergen Morosz comments: "The challenge was to correctly assess the input material in terms of its composition and degree of soiling and the system design required for processing. In close cooperation with the

图5：MAS的回收设备是由单螺杆挤出机（用于增塑预清洁的PE薄片）（左）与双螺杆挤出机（用于有效排气）以及通过与添加剂混合使回收产品更具升值潜力的成套设备（图片：MAS）

*Picture 5: The MAS recycling plant is the combination of a single-screw extruder for plasticizing the pre-cleaned PE-flakes (left) and a twin-screw extruder for efficient degassing and the potential for up-cycling through compounding with additives (Photo: MAS)*



图4：Pan Era集团使用至少80%的r-HDPE制成的产品示例（图片：Pan Era）

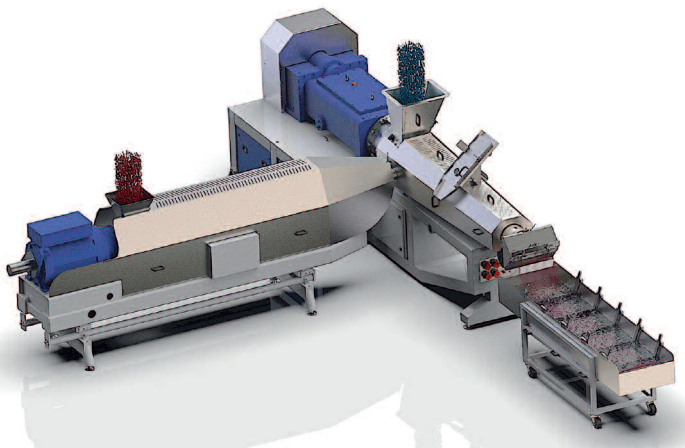
*Picture 4: Examples of product of Pan Era Group made from at least 80% r-HDPE (Photo: Pan Era)*

customer, after a series of representative material tests, we have found a process technology solution that optimally uses the potential of the MAS extruder. The ideal solution was, respectively is, a system concept derived from our ES compounder extruder cascade. It consists of a single-screw extruder for melting and plasticizing the washed and dried PE flakes and a subsequent CDF 500-D twin disc filter unit from our supply program, where particles with a fineness of 130  $\mu\text{m}$  are retained and segregated. The thus cleaned material stream is then fed to the conical MAS twin-screw extruder by side-feeding in the area of the feed zone. But that was not enough cleaning. There were still printing ink residues and odor emissions in the melt. In order to remove these contaminations we have added a vacuum unit to the specifically large intake opening of the twin-screw-extruder and converted it into a degassing zone, where the volatile melt components can be sucked off efficiently. From there the polymer melt is conveyed further, compressed gently and homogenized until it finally reaches a second degassing zone for second cleansing (Picture 5). Passing an MFI-measuring station, it finally reaches the granulating unit."

As an additional bonus, the system concept also offers the compounding ability which actually is used to achieve high degree of homogenization of the recycled resin. As it is the core property of the ES-compounder systems, there is the intention to use it for extending the scope of materials to compounded materials for technical applications. To do this, the feed zone of the MAS twin screw extruder only needs to be combined with a vacuum lock through which powdered additives such as talc or calcium carbonate can be added without the need for additional side feeder units. This means that Pan Era Group has every opportunity to expand the r-HDPE range to include material variants for technical applications.

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## 高堆积密度，高回收效率

### Recycling, Fibers and Filaments: High Bulk Density for High Recycling Rates

利用粉碎和团聚技术回收生产废料Herbold Meckesheim

为了保持产品竞争力和有效利用资源，必须回收生产废料。同时，行业对产品质量的要求很高，尤其是在生产PET纤维、细丝或无纺布时。零废物生产的共同目标通常是坚定不移的。然而，对于生产商来说，重要的是要审查生产废料的构成并对废料采用更好的加工方案，以保持产品的竞争力。一种新的办法是将这些轻质的回收物料重新加工成高堆积密度的团聚体，以便直接加工，这将带来更多的利润。



Recycling production waste using size reduction and agglomeration technology by Herbold Meckesheim

The recycling of production waste is necessary in order to stay competitive and resource-effi-

cient. At the same time, quality requirements in the industry are high – especially in production of PET fibers, filaments or nonwovens. The common target of a zero waste production is often inconvertible. Yet, it is important for manufacturers to review their structures and implement better solutions for their wastes in order to stay competitive. One upgrade might be to reprocess these light materials into high bulk density agglomerate for direct reprocessing which would lead to more profitability.

#### 制造商面临的挑战

面对新的回收目标常常伴随着对实现此类内部项目的担忧。必须满足质量标准，成本必须处于最低水平；每项投资都需要进行全面考虑。从表面上看，最简单的解决方案似乎是清除碎屑，不再理会它。但是，这个时代要求越来越多的社会责任。报废不能被视为丢弃废料—应当将其视为充分利用废料的业务机会。回收利用纤维废料面临着挑战，例如废料的长度大多数情况下似乎是无限的，因此很难处理。

但是，每个制造商都需要考虑废料处理的长期解决方案，以确保企业在回收率和二氧化碳排放量方面具有高水平的可持续性。关于纤维、细丝或非织造布，粉碎是必须要做的第一步，尽管如此，粉碎并不容易，因为处理这种材料存在着不断缠绕传统的旋转轴的切实风险。即使减小了材料的尺寸，仍然有着极低的堆积密度，给存储、输送和计量带来了各种相关的问题。

#### Herbold的解决方案

完成这种任务需要使用Herbold的HB系列造粒机以及Herbold HV 塑料粉碎机粉碎和团聚相结合的工艺。这种造粒机的设计特点是带有一个具有真正剪刀式切粒功能的造粒机和带液压柱塞的进料斗。由于对料斗和粉碎室的特别设计以及高切割频率，能够很方便地将大量的纤维、细丝或非织造布转化成尺寸小于15毫米的薄片。

这意味着：由于采用了开放式的设计，不再需要过多顾虑复杂的加工和纤维缠绕在切割机起切断作用的转子上等问题，仅需要通过液压油缸，将进入的物料“咬入”切割室，因此，设备用正确的方式消化了长纤维而不会出现问题。最后，生产商还将受益于其节省空间的设计，因为仅需要进行一次粉碎即可实现缩小体积的目标。

#### 提高材料的堆积密度

如何让挤出机螺杆的第一道有斜度的螺楞将塑料原料推

向下游呢？原料需要有合适的尺寸、合适的表面和高堆积密度。这些因素将对挤出机的产量产生巨大影响。面对许多有关塑料原料团聚的项目，Herbold不断开发其HV 塑料粉碎机，以加工大多数不同外观的热塑性的聚合物。但是纤维的后处理又如何呢？减小纤维尺寸后，应将其团聚。该步骤由HV 塑料粉碎机来完成，它可以提高堆积密度并改善材料的流动性。

在很大程度上，该过程与在材料上轻柔地施加摩擦有关—这又具有两个作用：团聚和蒸发残留的水分以及纺丝油，使材料达到适合挤出的状态。根据不同的技术规格，堆积密度最多可以增加八倍。

这样，HV 塑料粉碎机制造出了一种塑料原料，可以极好地用于计量和混合。与没有预先处理的直接进料方式相比，这种在线式设备方案改善了能量平衡以及挤出机的生产能力。客户表示，他们节省能源消耗的比例高达30%。

### 期望和重要性

生产商在其车间内开动制粒机、团聚机生产线能期望得到什么？首先，最重要的是要参与一种普遍的、显然正在出现的趋势，即对产品更高的回收率提出了更高的要求。这是通过将所产生的纤维、长丝或无纺布的废料进行内部再生来实现的。它需要采取适当的小型化步骤，采用例如HB系列的Herbold制粒机以及可以处理当前大体积废料的设备，即HV塑料粉碎机。该机器可使堆积密度增加多达八倍。这个概念已经成为了现实，并且客户见证了其效率，他们声称已经实现了高达30%的节能。最终，Herbold Meckesheim很高兴能够为客户提供这些要求苛刻的应用程序，并期待以其有针对性的回收目标为PET纤维、长丝或非织造布制造商提供支持。

### Challenge for manufacturers

Facing new recycling targets often goes along with worries about the realization of such internal projects. Quality standards must be fulfilled, costs have to be at a minimum level; each investment needs to be perfectly considered. Superficially seen, the easiest solution seems to be to get rid of scraps and do not bother about it any further. Though, these times demand increasing responsibilities. Scrap cannot be seen as scrap – it should be seen as an opportunity to get the most out of



工业用PET丝

### Post-industry PET-filaments

one's business. Using fiber scraps goes along with challenges, such as the length of the material as it mostly seems to be infinite, therefore difficult to handle.

Nonetheless, every manufacturer needs to consider long-term solutions for the waste to ensure the business is running on high levels of sustainability regarding recycling ratios and CO<sub>2</sub> emissions. Concerning fibers, filaments or nonwovens, down-sizing is the first step which needs to take place – though, this size reduction is not easy to handle as there is the steady risk that the material will wind around conventional rotor shafts. Even if the material has been size reduced, there is still the issue of extreme low bulk density with all its associated problems such as storing, conveying and dosing.

### Herbold's solution

This task requires a process combining size reduction and agglomeration using a Herbold Granulator of the HB series and Herbold HV Plastcompactor. The design of this granulator is characterized by a feed hopper and hydraulic ram with a granulator having a true scissor cut. Due to the design of the hopper, the grinding chamber and the high cutting frequency, it is easily possible to transform bulky quantities of fibers, filaments or nonwovens into flakes with sizes of less than 15 millimetres. This means that there is no more talk about complicated handli-

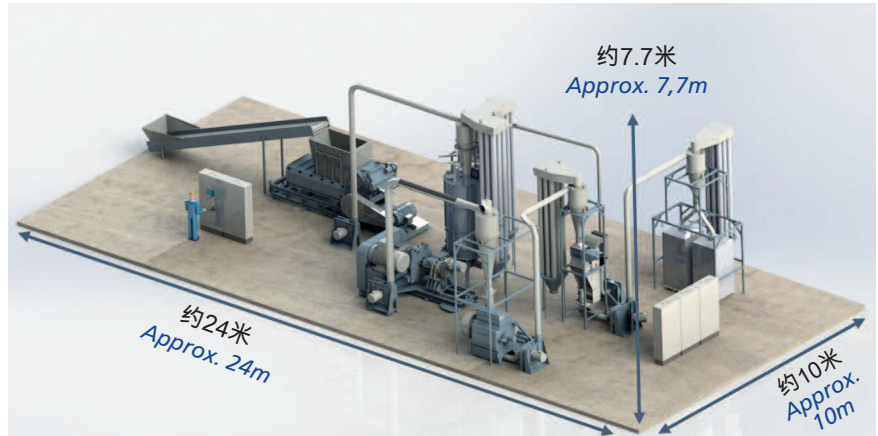
密度增加的平均值

Density increase in average

物料 / Material	输入密度 / Input density	输出密度 / Output density	说明 / Comments
PET 纤维 / PET fibers	61 g/l / 61 g/l	469 g/l / 469 g/l	密度增加约7.7倍 / Approx. 7,7x increase of bulk density
PE单丝 / PE monofilaments	60 g/l / 60 g/l	321 g/l / 321 g/l	密度增加约5.3倍 / Approx. 5,3x increase of bulk density
PE纤维 / PE fibers	60 g/l / 60 g/l	326 g/l / 326 g/l	密度增加约5.3倍 / Approx. 5,3x increase of bulk density

已安装生产线概念的示例 ( 精简和团聚 )

*Example of installed line concept (downsizing and agglomeration)*



ing or fibers winding around the rotor as the guillotine rotor, with its open design, only nibbles at the material that is fed via the hydraulic ram. Hence, it literally digests the long fibers trouble-free. Lastly, manufacturers will also benefit from its space-saving design as only one size-reduction step is necessary.

**Boost for the material's bulk density**

What do the first angled flights of the extruder screw need to push the plastic downstream? They need the right size, surface and a high bulk density of the materials. These factors will have a tremendous influence on the output of the extruder. Having coped with lots of projects concerning the agglomeration of plastics, Herbold has continuously developed its HV Plastcompactor in order to deal with the majority of thermoplastic polymers in different appearances. But what about the reprocessing of fibers? Once the fibers are size-reduced, they should be agglomerated. This step is done by the HV Plastcompactor which increases the bulk density and improves the flow properties of the material.

团聚的PET纤维

*PET fibers agglomerated*



To a great extent, the process is associated with gently exercised friction on the material – this in turn has two effects: agglomeration and evaporation of residual moisture and spinning oils down to a level which makes the material suitable for extrusion. Depending on the specifications, bulk density can be increased up to eight times.

Furthermore, the HV Plastcompactor creates a plastic which is excellent for dosing and mixing. This inline-solution improves the energy balance as well as the throughput of the extruder compared to straight infeeding without prior treatment. Customers stated that their savings on energy consumption were up to 30%.

**Expectations and importance**

What can a manufacturer expect by having a granulator-agglomerator-line running in his halls? First and foremost, to participate in the prevailing and apparently ongoing trend of increasing demands for higher recycling rates in their products. This is realised by making resulting waste volumes of fibers, filaments or nonwovens applicable for internal recycling. It takes a proper downsizing step such as the Herbold Granulator of the HB series as well as an appliance which can deal with the prevailing high volumes, namely the HV Plastcompactor. The machine enables an increase of bulk density of up to eight times. This concept has already been realized and their efficiency witnessed by customers, who claimed that energy-savings up to 30% had been achieved. Ultimately, Herbold Meckesheim is pleased to be able to help customers with these demanding applications and is looking forward to support manufacturers of PET fibers, filaments or nonwovens with their targeted recycling ambitions.

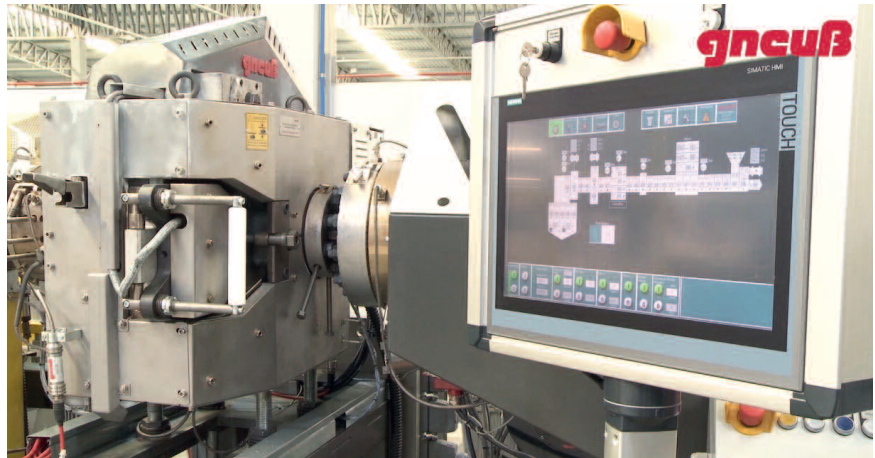
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# 可靠、无故障的熔体过滤，是塑料加工中回收经济使用的决定性因素

## Recycling: Reliable, Trouble-Free Melt Filtration as a Decisive Factor for the Economical Use of Reclaim in Plastics Processing

如果在生产过程中添加内用废物和严重污染的消费后废物，则不同尺寸和数量的废料颗粒被引入熔体流中。必须有效地过滤掉这些产品，以确保最终产品的一致和高质量。然而，同时熔体过滤不得对生产过程产生任何干扰性影响。

*If inhouse waste and heavily contaminated post-consumer waste are added to the production process, foreign particles of various sizes and quantities are introduced into the melt flow. These have to be filtered out efficiently to ensure a consistent and high quality of the end product.*



*At the same time, however, melt filtration must not have any disturbing influence on the production process.*

更换网片时，多个过滤系统需要生产中断，导致压力峰值导致工艺干扰，如果在网片更换过程中沉积的材料脱落，甚至会产生黑点杂质颗粒。

### 永久恒定的条件，无干扰的生产过程

相比之下，采用独特的Gneuss旋转技术，熔体流动的条件永久不变，即整个滤网片的压降或网片上的污染量都保持恒定，因此可以始终在最佳范围。

这是通过滤盘的旋转运动实现的，滤网通过旋转运动通过熔体通道。控制系统可确保滤网污染保持恒定。一旦污染负荷变化，控制系统就会自动做出反应并改变滤盘的转速。因此，整个系统上的压力保持恒定，在过滤过程中唯一的非恒定变量是滤盘的转速。

因此，旋转技术成为增加使用回收或再循环材料的理想解决方案。Gneuss熔体过滤系统可以轻松集成到现有过程中，非常适合作为改造解决方案。自给自足的控制系统与生产线一起监控过滤过程。

### Gneuss过滤系统在回收应用方面的优势

Gneuss过滤系统已针对苛刻的回收应用而开发，并已成功使用了数十年。来自德国Bad Oeynhausen的技术领先者的所有过滤器均使用经过验证的独特旋转技术，该技术具有以下优点：

- 不会因过滤器操作而中断或干扰生产过程
- 压力恒定生产，无压力峰值
- 以最小的工作量实现自动，安全的操作

- 针对特定应用和流变学优化的熔体通道，熔体停留时间短，熔体通道设计无死角，产品更换迅速
- 即使是敏感塑料也可以无干扰地加工
- 最终产品始终如一的高质量
- 简单安全的滤网片更换
- RSFgenius型全自动反冲洗过滤系统，可有效自清洁过滤器网片
- 滤网片由多层不锈钢网制成，在回收应用中允许细度低至10 μm
- 在薄膜，片材和纤维生产，复合材料，PVC和其他苛刻应用中成功使用超过35年

Several filtration systems require a production interruption when changing screens, cause process disturbances due to pressure spikes or even generate particles if deposited material comes off during screen changes.

### Disturbance-free production process thanks to permanently constant conditions

In contrast, with the Gneuss Rotary Technology, the conditions in the melt flow are permanently constant, i.e. the pressure drop across the screen, respectively the amount of contamina-



tion on the screen, is kept constant, so that the line can always be operated in the optimum range.

This is achieved by the rotating movement of the filter disk, with which the screens are transported through the melt channel. A control system ensures that the screen contamination remains constant. As soon as the contamination load varies, the control system reacts automatically and changes the rotational speed of the filter disk. The pressure across the system thus remains constant. The only non-constant variable in the filtration process is the rotational speed of the filter disk.

This makes the Rotary Technology the ideal solution for the increased use of reclaim or recycled material. Gneuss Melt Filtration Systems can be easily integrated into an existing process and are perfectly suited as a retrofit solution. The self-sufficient control system monitors the filtration process in conjunction with the production line.

#### *Advantages of Gneuss Filtration Systems for recycling applications*

The Gneuss Filtration Systems have been developed for demanding recycling applications and have been used successfully for decades. All filters from Gneuss work with the proven Rotary Technology, which offers the following advantages:

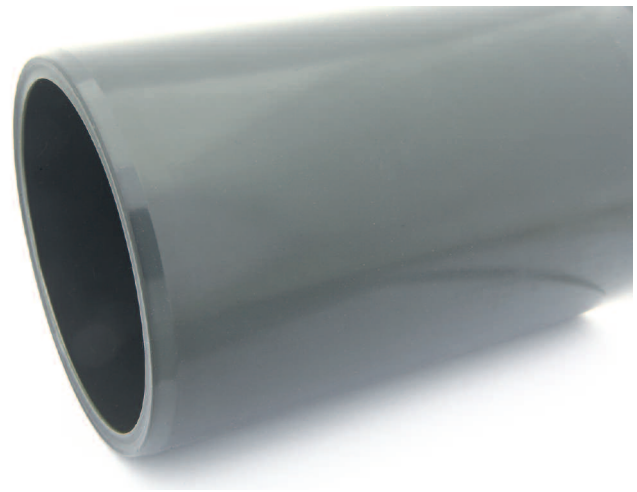
- No interruption or disturbance of the production process caused by the filter operation
- Pressure-constant production, free from pressure spikes
- Automatic and safe operation with minimal operating effort
- Application-specific and rheologically optimised melt channel for short melt residence times, melt channel design free from dead spots and fast product changes
- Disturbance-free processing even of sensitive plastics
- Consistently high quality of the end product
- Simple and safe filter element replacement
- Efficient cleaning of the filter elements thanks to the fully automatic back-flushing Filtration System Type RSFgenius
- Screens made of multi-layer stainless steel mesh, which allows finenesses down to 10 µm in recycling applications
- For more than 35 years successful use in film, sheet and fiber production, compounding, PVC and other demanding applications

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## 环保型管材切割设备降低了生产成本 *Pipe Extrusion: Cut pipes, Cut costs – Go Green*

Sica的“绿色机器”为可持续发展的世界做出了贡献。实际上，公司在研发方面的投入是为了开发出一种设备，能够降低加工成本、减少能源和材料的消耗以及避免塑料粉尘并回收切屑，确保清洁安全环境。Sica是如何做到的？

*Sica contributes to a sustainable world with its “green machines”. In fact, its investments in research and development are geared to machines that reduce process costs, reduce energy and material consumption and avoid plastic dust and chips recycling, assuring a clean and safe environment. How did Sica do it?*





( PPR-FG-PPR ) 的切割图片可以清楚地看出这一点；传统切割工艺采用经典的液压系统，而新切割工艺具有由 Sica 开发的特殊电动切割功能，现在可通过这种创新的锯来实现。

如果要为子孙后代的福祉而保护地球，那么我们所有人都应该努力避免环境污染，同时要降低成本。

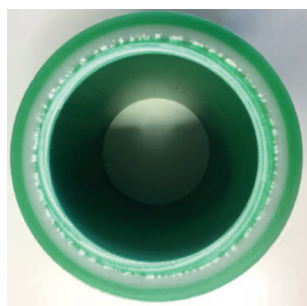
One example is the patented solution to cut and chamfer PVC pipes without removing material. After years of research, Sica is now promoting a saw that warms up a portion of the pipe, cut it with a parting knife and then creates a bevel by shaping the heated portion instead of using a chamfer tool that removes material, which creates dust and/or chips. It's a big innovation that allows a noiseless cut and avoids the expensive need for recycling material, cleaning the environment around the saw, and also downstream. In fact, with traditional saws, even when there is an excellent vacuuming system for dust and chips, it cannot completely avoid chips depositing on the saw mechanism or on the cut pipe. Therefore, pipes will always carry part of the scrap material with them on their way towards the beelling machine or the end of the line.

Another interesting innovation in the field of cutting swarfless pipes is the patent pending electric saw for HDPE, PP-R, multi-layer and PVDF pipes. Each cutting movement is electric, therefore silent, precise and extremely repetitive. In particular, for the movement of the cutting arm, the machine has been equipped with an innovative extremely compact servo-actuator which integrates the motor and gear unit, and which guarantees superior thrust force even at high speeds, impact resistance, complete absence of vibrations and high efficiency – all translate into superior final quality of the cutting process. This is clear from the pictures of the cut of a 3-layer pipe (PPR-FG-PPR); the old cut is made with a classic hydraulic system, while the new one with a specific electric cutting action developed by Sica and now possible with this innovative saw.

Avoiding environment pollution and reducing costs, is what we should all pursue to give our world a hand if it is to be preserved for the well-being of future generations.



新 / New



老 / Old

一个例子是已获得专利的设备方案，可在不除去材料的情况下切割 PVC 管并倒角。经过多年的研究，Sica 现在正在推广一种锯，该锯可对一段管道加热，用分型刀将其切断，然后通过将已加热部分塑形来形成斜面，而不是使用去除材料的倒角工具，因为倒角工具的切削方式会产生粉尘和 / 或碎屑。这是一项重大的创新，可实现无噪音切割，并不需要回收切屑材料、保持锯周围以及下游设备环境的清洁等昂贵装置。实际上，对于传统的锯，即使有出色的粉尘和碎屑吸尘系统，也无法完全避免碎屑沉积在锯机构或被切割的管材上。这样一来，管道在向扩口机或生产线末端移动的过程中不可避免会携带一部分残余料。

无尘切割管材领域中的另一个有价值的创新是正在申请专利的电锯，这种电锯可用于切割 HDPE，PP-R，多层管和 PVDF 管。每个切割运动都是电动的，因此实现了静音、精确且可重复性极高。特别是对于切割臂的移动，该机器配备了创新的极其紧凑的伺服执行器，该伺服执行器包含了一体化的电机和齿轮箱，即使在高速、有冲击的工况下运行，也能确保在完全没有振动的情况下拥有出色的推力和高效率—所有这些都保证了切割工序出色的生产质量。从三层管道

► SICA S.p.A.  
www.sica-italy.com

# 最大程度缩小体积-新型紧凑型且价格合理的系统

## Measuring Technology: Reduced to the Max – New Compact, Affordably-Priced Systems

紧凑，经济高效，整装待发-100%清晰的外观：  
PIXARGUS成功推出了两个新系列的系统：  
iProfilControl：是在较低价格水平进行360°全方位轮廓检查的基本解决方案；AllRounDia Dual-Vision是首个真正经济实惠的解决方案，可对圆角进行360°全方位检测。

*Compact, cost-efficient, immediately ready to go – and with a 100% clear view: PIXARGUS has successfully launched two new system families: iProfilControl, a basic solution for complete 360° profile inspection in the lower price segment, and AllRounDia DualVision, the first genuinely economically priced solution for complete 360° inspection of rounds.*

无论是用于窗户、电缆导管还是踢脚板的塑料型材，在挤出工艺中，光学在线质量检测都具有许多优势。借助PIXARGUS的新型紧凑型检测系统，可以比以前更早地发现缺陷，因此可以实时进行纠正。这明显减少了不合格的产品。成本优化后的新型装置，尺寸有了最大程度的缩小，以极具吸引力的价格提供最佳的检测性能。

iProfilControl：价格合理的基本系统系列，可对轮廓进行完整的360°检查360°尺寸测量或100%表面检查-或两者结合，在我们的多合一解决方案中结合在一起：紧凑的iProfilControl入门级测量装置，具有ProfilControl 7系列已具有的可靠检验技术。该系统从4个摄像头的型号开始，可以根据需要扩展至6或8个摄像头，以满足每种工艺的要求。

iPC Surface (iPC S) 确保对所有可见表面进行完整的100%检查。它能够检测过去极难检测到的异常和缺陷，例如针孔或毛孔、划痕、裂缝和凹槽。此外，由于可以使用多达8个摄像头，因此可以100%检查具有边缘和各种不同角度的轮廓。

iPC Dimension (iPC DX) 是测量宽度，距离，角度和半径的专用装置，由于其通过八个激光传感器“密切监视”被检产品的尺寸，包括尺寸，距离，角度和半径，因此能够检测出目标轮廓的微小偏差，几何形状复杂的夹紧槽也不例外。

iPC DualVision iPC iPC DualVision (iPC DV) 是多合一解决方案，即在一个系统中将100%表面检测以及360°尺寸测量结合起来。集成的多区域扫描功能为光学检查提供了全新的可能性。对于每个摄像头，可以定义所需的视场（根据缺陷大小和其他参数），从而可以同时执行各种检查任务。



由测量技术专家PIXARGUS推出的新型低预算系列iProfilControl，具有经过验证的检测技术，总是关注本质，该技术被智能地集成到紧凑型入门级测量装置中。结合在我们的多合一系统中：进行360°几何形状测量或100%表面检查-或两者兼而有之

*The new small-budget series, iProfilControl, introduced by measuring technology specialist PIXARGUS, comes with proven inspection technology smartly integrated into compact entry-level gauges. Whether 360° geometry measurement or 100% surface inspection – or both, as combined within our All-in-One system: iProfilControl always focuses on the essential*

检查模块集成在一个传感器头中，可单独或同时切换。

iPC Basic系列经过成本优化的入门级型号几乎可以立即在每种生产环境中使用。它们可作为带有集成计算单元的紧凑型台式系统使用。

### AllRounDia DualVision取代方块检测器

AllRounDia DualVision (AllRounDia DV) 是第一款价格不太昂贵的系统，它使用一个传感器头就可以无间隙地围绕产品的整个圆周连续测量管道、管材和电缆的表面和轮

iProfilControl只需几秒钟即可完成对各种型材的检查，无论是简单型材还是高度复杂的型材。新基本系列的型号使用了其早先产品ProfilControl 7所提供的经过验证的检测技术。他们的系统容量、功能范围和硬件已进行了调整，以实现最高效率，同时减少使用量身定制的设备。

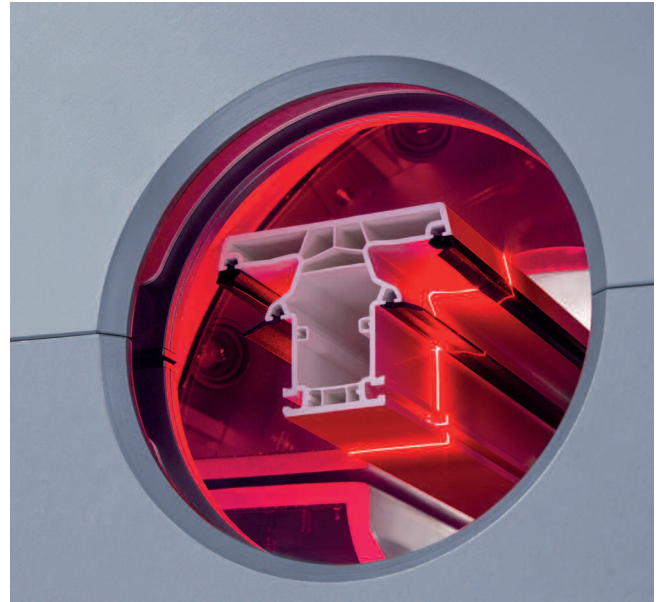
*iProfilControl inspects all kinds of profiles, from simple to highly complex, in a matter of seconds. The models of the new basic series use the proven inspection technology known from their big brother, ProfilControl 7. Their system capacity, range of functions and hardware have been adapted to achieve maximum efficiency with reduced, purpose-tailored equipment!*

廓。PIXARGUS极为成功的ProfilControl 7技术的硬件和软件已经进行了优化，适用于测量简单的几何形状为圆形的产品。

AllRounDia DV是有史以来第一个能够对圆形和椭圆形轮廓进行无间隙360°测量的装置。PIXARGUS通过采用基于摄像头的激光三角测量法来实现这一目标。传统的使用阴影法进行的基于轴的测量仅覆盖六个单点，而AllRounDia DV的光学传感器可捕捉400万个像素。这样，不仅对于较大的缺陷（节点），甚至任何大小的所有缺陷均被100%捕获。此外，二合一系统同时检查表面是否有缺陷。专门开发的照明原理可确保视野和测量场完全均匀地照明。正是由于这个原因，即使是难以发现的不规则和缺陷，例如尺寸仅为0.1 mm的裂缝，夹杂物，斑点和其他高对比度缺陷，也能被可靠地捕获。AllRounDia DV的极其紧凑的设计使其几乎可以毫不费力地准备在生产线上运行。它可以作为独立单元使用，也可以安装在底座上。

#### iProfilControl和AllRounDia DV两者完美联网

iProfilControl和AllRounDia DV标配了所有通用接口端口。它们的连接性可以通过众多其他选项进一步扩展，所有这些选项都使仪表可以轻松集成到公司网络结构，SAP环境以及现有的PDA和ERP系统中。Pixargus的所有检测系统都可以与其他传感器和测量系统联网，并可以通过OPC UA接口在水平和垂直方向上进行集成，例如，集成到创新的Industry 4.0应用程序中。



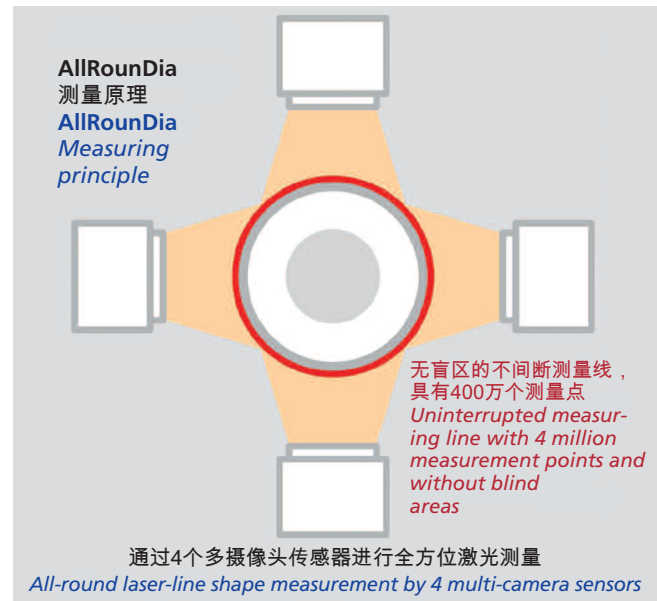
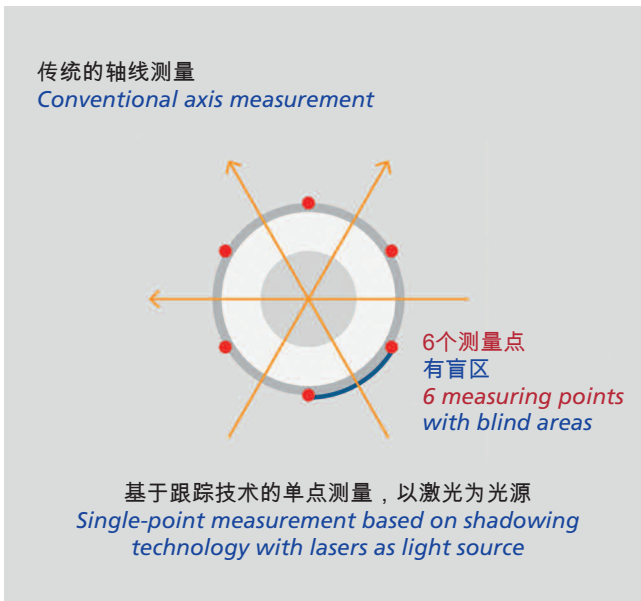
Whether it be plastics profiles for windows, cable conduits or skirting boards – in extrusion processes, optical inline quality inspection has many advantages. With the new compact inspection systems from PIXARGUS, flaws are detected much earlier than before and can therefore be corrected in real time. This tangibly reduces out-of-spec production. Reduced to the max, the new cost-optimized downsized models provide maximum inspection performance at a highly attractive price. iProfilControl: The rationally-priced basic systems series for complete 360° inspection of profiles 360° dimension measurements or 100% surface inspection – or both, as combined within our All-in-One solution: the compact iProfilControl entry-level gauges come with proven inspection technology known from the ProfilControl 7 series. Starting with a 4-camera model, the system can be scaled up to 6 or 8 cameras, as required, to meet every process requirement.

iPC Surface (iPC S) assures complete, 100% inspection of all visible surfaces. It is able to detect abnormalities and defects that were extremely difficult to detect in the past – pinholes, for example, or pores, scratches, cracks and grooves. Also profiles with edges and various different angles can be inspected 100% thanks to the possibility of using up to 8 cameras.

iPC Dimension (iPC DX) is the expert gauge for widths, distances, angles and radii, able to detect ultra-small deviations from the target contour thanks to its eight laser line sensors “watching closely” the dimensions of the inspected product, including the complex geometry of the clamping grooves.

全新的AllRounDia DualVision测量装置可实现在单个工艺流程中测量圆形轮廓并100%检测圆形表面缺陷。这使得该系统大大优于常规的团块检测器

*The new AllRounDia DualVision gauge measures the contour of rounds and detects surface defects of rounds 100% – all in a single process. This makes the system much superior to a conventional lump detector*



传统的（六点）轴线测量与AllRounDia DualVision测量装置对比：后者的光学传感器可捕获800万像素，从而确保在整个圆周上进行无间隙检查，没有任何盲区的影响

*In contrast to conventional (6-point) axis-based measurements, the optical sensors in an AllRounDia DualVision gauge capture 8 million pixels, guaranteeing gapless inspection around the complete circumference without any dead zone effects*

iPC DualVision (iPC DV) – the All-in-One solution – combines 100% surface inspection and 360° dimension measurement within one system. The integrated MultiArea scanning feature opens up entirely new possibilities for optical inspection. For each camera, as many fields of vision as desired can be defined (by defect sizes and other parameters), allowing various inspection tasks to be performed at the same time. The inspection modules are integrated within one sensor head and switchable separately or in parallel.

The cost-optimized entry-level models of the iPC Basic series are virtually immediately ready to go in every production environment. They are available as compact desk-top systems with integrated computing unit.

#### **Replacing the lump detector: AllRounDia DualVision**

AllRounDia DualVision (AllRounDia DV) is the first affordably priced system that measures both the surfaces and contours of tubing, tubes and cables – gaplessly, continuously and around the complete circumference of the products – with one single sensor head. The hardware and software of PIXARGUS' highly successful ProfilControl 7 technology have been optimized and adapted to the measurement of product of simple, round geometries.

AllRounDia DV is the first ever gauge able to deliver gapless 360° measurement of round and oval contours. PIXARGUS achieves this by employing a camera-based, laser-triangulation method. While conventional axis-based measurements using the shadowing method cover only six single points, the optical sensors of AllRounDia DV capture 4 million pixels. In this way, not only the larger defects (nodes), but all defects of any size

are captured 100%. What is more, the two-in-one system simultaneously inspects the surface for defects. The specially developed lighting concept ensures that the field of vision and the measuring field are perfectly homogeneously lit. Precisely for this reason, even difficult to detect irregularities and flaws in the material, such as fissures, inclusions, flecks and other high-contrast defects from a size of only 0.1 mm, are reliably captured.

AllRounDia DV's extremely compact design enables it to be ready to run in the production line with virtually no effort at all. It is available as a stand-alone unit or mounted on a stand base.

#### **Both perfectly networked: iProfilControl and AllRounDia DV**

iProfilControl and AllRounDia DV come with all common interface ports as standard. Their connectivity can be further expanded by numerous additional options, all of which make the integration of the gauges into corporate network structures, SAP environments and existing PDA and ERP systems very easy. All inspection systems from Pixargus can be networked with additional sensors and measuring systems, and integrated – horizontally and vertically – via an OPC UA interface, for example, into innovative Industry 4.0 applications.

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# 奥地利发明成为中国水泥包装国家标准

## *Extrusion for Packaging: Austrian Invention Becomes National Standard for Cement Packaging in China*

随着中国水泥生产现代化进程的推进，政府同时制定了一项国家标准，规定了水泥包装袋的类型和规格。《水泥包装袋》中国标准GB/T9774-2020于2020年10月正式发布，其中允许使用的三种袋型之一是由聚丙烯扁丝织物制成的方底阀口袋。这种袋子由奥地利设备制造商史太林格公司于1995年发明，并以AD\*STAR品牌获得专利。

*As China is modernizing its cement production, the government has also set up a national standard defining types and specifications of bags used for packaging cement. One of the three bag types permitted in the Chinese Standard GB/T 9774-2020 "Sacks for Packing Cement", which was officially released in October 2020, are block bottom valve bags made of woven polypropylene tape fabric. This type of bag was invented in 1995 by the Austrian engineering company Starlinger & Co. GmbH and patented under the brand name AD\*STAR.*

### 环保水泥袋

史太林格是一家专门从事塑料编织包装设备的公司，凭借AD\*STAR袋，为水泥和各种干散货创造了一种可持续高效的包装解决方案。

AD\*STAR袋其背后的概念是将纸袋的优点（砖块形状和自动处理的适用性）与PE薄膜袋的紧密性和灵活性，以及编织PP袋的强度和牢固性结合起来。其结果是：用拉伸和编织的聚丙烯扁丝制成了一种单层覆膜方底阀口袋。

AD\*STAR袋的主要优点是其极低的破损率和良好的防潮性能。特别是在中国这样的国家，袋装水泥的运输和储存非常普遍，涉及大量转运和长期储存。在潮湿条件下，由于水泥袋破裂或硬化造成的水泥损失是一个大问题。在这方面，用AD\*STAR袋包装水泥可节省大量成本：低破损率和良好的防潮性意味着在物流链中损失的水泥将明显减少。因此，不仅减少了环境污染，而且只需生产更少量的水泥来弥补这些损失，从而减少了二氧化碳排放。2015年进行的一项独立生命周期分析(详见Daxner T., Kosinska I., Merl A. Carbon Footprint and LCA of AD\*STAR Technology. PE INTERNATIONAL (now THINKSTEP AG), 2015.)表明，由于这些特点，AD\*STAR水泥袋和多层纸袋相比，对全球变暖潜在影响更低，是目前最环保的水泥包装。

AD\*STAR袋子是在史太林格ad\*starKON制袋机上生产的，有多种尺寸可供选择。公司专注于研发，确保了AD\*STAR袋和AD\*STAR生产技术不断改进并适应市场需求。技术的进步和新产品的特点，如易开口封合或提手功能使袋子加持多功能以适用于不同的应用。



Starlinger AD\*STAR水泥袋

Starlinger AD STAR cement bags

目前，在五大洲安装的550多台史太林格制袋机上，每年生产约157亿个AD\*STAR袋子。

### 安全高效包装的高标准

中国新的水泥包装标准适用于50公斤以下的水泥袋，并列出了上述覆膜编织塑料袋（由一层覆膜塑料布或纸内衬制成）、纸袋（3层、3层PE内衬、4层袋），以及纸塑复合袋（带塑料内衬的纸袋）作为可能的包装选择。所有三种类型的袋子都必须设计成方底阀口袋。

本标准规定了水泥袋的尺寸以及物理和机械要求。例如，关于牢固性，一个水泥袋在从1米的高度跌落至少6次后才能破包。

此外，该标准还规定了制袋过程中的印刷和标记、袋子总外观、检测方法和生产过程中的质检规则。它还规定，每一个袋子在出售前必须提供证书。通过在新的国家标准中推荐编织聚丙烯方底阀口袋，体现了中国政府面向未来，旨在提高水泥行业的可持续性的做法。它抑制了水泥在生产、运输和储存过程中不必要的损失，减少了对环境的负面影响，改善了水泥灌装线上操作人员的工作环境，总体使50kg或更小单位的水泥操作效率更高。这也意味着，以前广泛使用的缝制编织塑料袋形状不规则，经常泄漏，自动填充和处理存在问题，将不再被允许用作水泥包装。

注：AD\*STAR®为注册商标。AD\*STAR®袋子仅可在史太林格设备上生产。

### Environment-friendly cement bags

With the AD\*STAR bag, Starlinger, specialised in machinery for woven plastic packaging, created a sustainable and efficient packaging solution for cement and all kinds of dry bulk goods. The idea behind it was to combine the advantages of a paper bag – its brick shape and suitability for automatic handling – with the tightness and flexibility of a PE film bag, and the strength and resistance of a woven PP bag. The result: A laminated one-layer block bottom valve bag made of stretched and woven polypropylene tapes.

The main assets of AD\*STAR bags are their extremely low breakage rate and excellent protection against moisture. Especially in countries like China, transport and storage of cement in bags is widespread and involves a lot of transshipping and long-term storage. Loss of cement due to bag rupture or hardening in humid conditions is a big issue. Packaging cement in AD\*STAR bags offers substantial savings potential in this respect: low breakage rates and good moisture protection mean that significantly less cement is lost in the logistic chain. Consequently, not only environmental pollution is reduced, but also less cement needs to be produced to replace these losses, which in turn saves CO<sub>2</sub> emissions. An independent Life Cycle Analysis carried out in 2015<sup>1</sup> showed that due to these characteristics AD\*STAR cement bags have lower global warming potential than multi-layer paper cement bags and are currently the most environmentally friendly packaging for cement.

AD\*STAR bags are produced on Starlinger ad\*starKON block bottom conversion lines and are available in a wide range of sizes. The company's focus on research and development ensures that AD\*STAR bags and AD\*STAR production technology are continuously improved and adapted to the needs of the market. Technological advancements and new product features such as easy-open closure or handles for carrying make the bags even more versatile and usable in different applications.

Currently, around 15.7 billion AD\*STAR sacks are produced each year on more than 550 Starlinger conversion lines installed on five continents.

### High standards for safe and efficient packaging

The new Chinese Standard for cement packaging applies to cement bags holding up to 50 kg and lists the above mentioned laminated woven plastic bags (made of one layer of laminated plastic fabric or with additional paper liner), paper bags (3-layer, 3-layer with PE liner, 4-layer bags), as well as paper-plastic composite bags (paper bags with plastic liner) as possible packaging options. All three types of bags must be designed as block bottom valve bags.

The standard specifies the dimensions as well as physical and mechanical requirements of the cement bags. Regarding break resistance, for example, a cement bag has to survive a drop from 1 meter height a minimum of six times before it breaks. Furthermore, printing and marking, general bag appearance, testing methods, and rules for quality inspection during bag manufacture are established in the standard. It also stipulates that each bag must be provided with a certificate before selling.

By recommending woven polypropylene block bottom bags in the new National Standard, the Chinese government has adopted a future-oriented approach that aims for more sustainability in the cement industry. It curbs unnecessary loss of cement during production, transport and storage, reduces environmental impacts, improves working conditions for operators on the cement filling lines, and generally makes the handling of cement in 50kg or smaller units more efficient.

<sup>1</sup> Daxner T., Kosińska I., Merl A. Carbon Footprint and LCA of AD\*STAR Technology. PE INTERNATIONAL (now THINKSTEP AG), 2015

Note: AD\*STAR® is a registered trademark. AD\*STAR® sacks are produced exclusively on Starlinger machinery.

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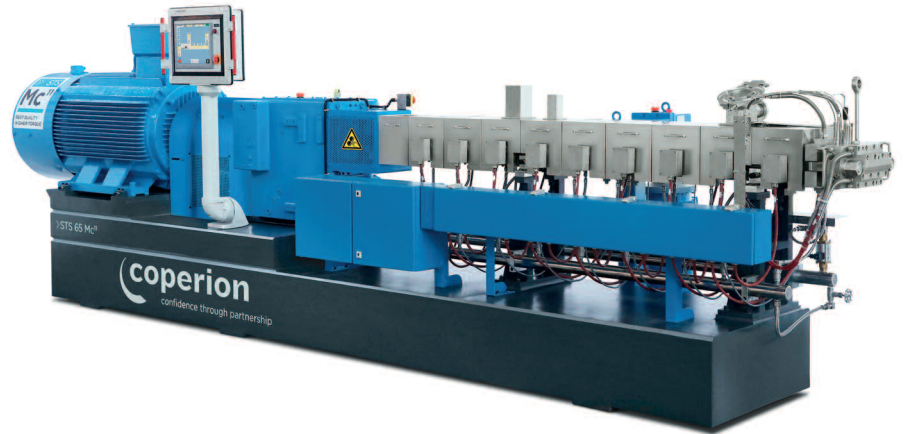
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## 贝宁吹膜制造商扩大生物降解料产能

### *Sustainable Compounding – Case Study: Blown Film Manufacturer in Benin Expands Biocompound Capacity*

为了进一步扩大产能以满足可持续性塑料加工的需求，位于西非贝宁的吹膜制造商Asahel公司再次订购了科倍隆配混生产线用于生产生物降解塑料。这套生产线包括一台含侧喂料机的STS 65 Mc<sup>11</sup>双螺杆挤出机，四台分别用于粉料、粒料和液体的科倍隆楷创高精度失重式喂料机和下游的冷却水槽、吸干机和SP 220 treasure拉条切粒机等。



*To expand sustainable production, west African blown film manufacturer Asahel Benin Sarl. has ordered a second Coperion compounding system specifically for manufacturing bio-based compounds. This system, built around an STS 65 Mc<sup>11</sup> twin screw extruder with side feeder, includes four Coperion K-Tron feeders for high-accuracy feeding of powders,*

吹膜制造商Asahel Benin选择科倍隆配混生产线STS 65 Mc<sup>11</sup>用于生产生物降解材料 (照片: 科倍隆, 斯图加特)

*Blown film manufacturer Asahel Benin chose a Coperion compounding system built around an STS 65 Mc<sup>11</sup> extruder to further expand production of bio-based compounds (Photo: Coperion, Stuttgart)*

*pellets and liquids, as well as an SP 220 treasure strand pelletizer with a water bath and an air wipe.*

Asahel与科倍隆在2018年7月塑料袋和包装展会上达成第一次合作并订购了一条实验线，随后成功生产出生物降解塑料，而新购的全新配混生产线将用于进一步扩大产能。Asahel将这些生物降解塑料主要用于自用并进行吹膜，生产出可生物降解的塑料袋及其他包装产品，让Asahel公司成为西非环保理念的先锋，并承担相关的社会环保责任。

新购的STS 65 Mc<sup>11</sup>双螺杆挤出机及其上下游设备目前正在现场进行安装调试，将于2021年春天投入使用。

#### 更灵活的配混技术

科倍隆将Asahel的配混生产线设计得非常灵活，以满足生物降解材料生产过程中可能遇到的各种工艺和配方。另外，得益于科倍隆楷创的高精度喂料机，各种不同形态的物料都可以精确计量添加到挤出机中。

四台失重式计量喂料称中，包含了两台T35双螺杆喂料机，一台S60单螺杆喂料机和一台液体称。S60单螺杆喂料机主要用于流动性比较好的物料，比如树脂颗粒或其他颗粒。T35双螺杆喂料机的因为有自清洁功能，主要用于如淀粉、碳酸钙等非常难喂的粉料的计量和喂料。两台T35双螺杆喂料机都配备了科倍隆楷创独有的ActiFlow™智能助流装

置，能可靠有效地避免料斗里形成物料架桥或老鼠洞。四台秤都安装在拥有专利的SFT称重模块上。正是这些称重模块保证了各种工艺操作条件下更精确、稳定和可靠的数字化计量。结合KCM-III的快速取样率，该先进称重科技可实现极高的瞬时精度，这在连续挤出工艺中显得非常重要。

在STS 65 Mc<sup>11</sup>挤出机的工艺加工段，生物可降解聚合物为熔融状态，不可熔融的部分如淀粉将被塑化。同时在加工段实现有效的分散和脱挥。接着从机头口模孔流出的料条浸到水槽中进行冷却，然后经吸干机表面脱水，再用SP 220 treasure拉条切粒机造粒。

科倍隆将设备所有能接触到物料的部分，都提供了防磨处理。设备的操作灵活性也得到了很大提升。Asahel可以用这条配混生产线，加工各种原材料，即使是腐蚀性物料或磨蚀性物料都可以保证很长的使用寿命。

#### 可持续性公司战略

自2018年开始，贝宁就已经开始禁止以石油基为原料的塑料袋及包装制品的进口、生产、销售和使用。而在那之前Asahel是用新PE颗粒料和回料来制造自己的薄膜产品，这些薄膜制品被广泛应用于日用品和超市购物袋。



新的环保禁令对于Asahel来说既是挑战也是机遇。公司将产品全部切换为生物降解塑料。在科倍隆斯图加特实验室实验成功并经过相关培训后，Asahel开始用一套 ZSK 26 Mc18 实验线在当地生产生物降解塑料，再将这些材料应用于下一步自行生产可生物降解的袋子和包装制品。

This new compounding equipment serves to expand upon Asahel Benin's pilot system from Coperion which the company has successfully used to manufacture biocompounds since Benin's July 2018 prohibition of plastic bags and packaging. Asahel Benin processes these biocompounds on its blown film machines into biodegradable bags and packaging, making the company a pioneer among west African manufacturers of more environmentally friendly short-life plastic products. The new STS 65 Mc<sup>11</sup> extruder and its peripheral equipment are currently being installed on site. Asahel Benin will begin production on this machine in spring 2021.

#### Compounding Technology with High Flexibility

Coperion designed Asahel Benin's compounding machine to be very flexible in order to achieve maximum freedom in the production of biocompounds. For example, thanks to the highly accurate Coperion K-Tron feeders, the system can handle a variety of raw materials, depending on the recipe.

The four loss-in-weight feeders include two T35 twin screw feeders, one S60 single screw feeder as well as a liquid feeder. While the S60 single screw feeder offers an optimal delivery of free-flowing materials such as base resin pellets or granulates, the self-cleaning action of the T35 twin screw feeders makes them ideal for feeding particularly difficult powder additives, such as starch or calcium carbonate. Both T35 twin screw feeders are equipped with Coperion K-Tron's unique ActiFlow™ smart bulk solid activator which reliably prevents the formation of material bridges or ratholes in the hopper. All four feeders are mounted on platform scales which feature patented Smart Force Transducer (SFT) single wire weighing technology. These scales provide accurate, stable and reliable digital load measurement under a broad range of operating conditions. Together with the fast sampling rate of the KCM-III feeder controller this advanced weighing technology results in extremely high short-term accuracy, which is particularly important in continuous extrusion processes.

The biodegradable polymers are melted in the process section of the STS 65 Mc<sup>11</sup> extruder, and non-meltable components, such as starch, are plasticized. Intensive dispersion and devolatilization of the melt results. After passing through the die head and nozzle the extrudate goes through a water bath for strand cooling, the strand surfaces are then dried using an air wipe, and the compound is finally pelletized in an SP 220 treasure strand pelletizer.

Coperion ensured that all of the product-contact machine parts have high wear protection, further increasing operational flexibility. Asahel Benin will be able to process various raw materi-



科倍隆槽创高精度失重式喂料机配有ActiFlow智能助流装置，可靠有效地避免料斗里形成物料架桥或老鼠洞（照片：科倍隆槽创，Niederlenz）

*Coperion K-Tron high-accuracy loss-in-weight feeders can be outfitted with an ActiFlow smart bulk solid activator to prevent ratholing and bridging of difficult powders (Photo: Coperion K-Tron, Niederlenz)*

als, even highly corrosive and abrasive ones, on this compounding system for many years to come.

#### Sustainable Corporate Strategy

Since 2018, the import, production, sale, and possession of petroleum-based plastic bags and packaging has been banned in Benin. Prior to that time, Asahel Benin Sarl. had used both new PE pellets as well as recycles for manufacturing the films that were then used predominantly in household products and in shopping bags for supermarkets.

The new law was at once both a challenge and an opportunity for Asahel Benin. The company switched its production completely to bio-based plastics. Following a successful test and training phase at Coperion's Test Lab in Stuttgart, Asahel Benin Sarl. began manufacturing biodegradable compounds using a laboratory system built around a ZSK 26 Mc18 in its home country. The company then processes these materials into biodegradable bags and packaging on its blown film machines.

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# 开拓视野，睿智思考 – 超宽CPP薄膜生产线，实现大批量生产的成本 效益最大化

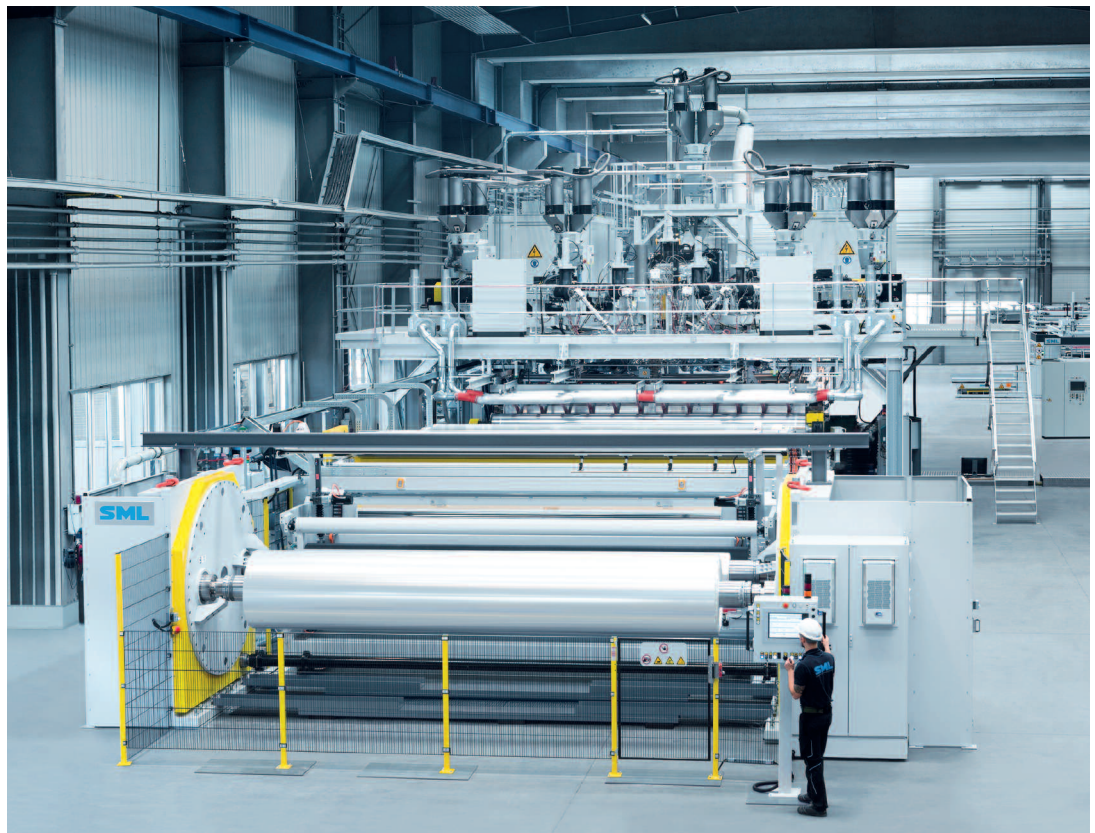
## *Film Extrusion: Think Big, Think Smart – Extra-Wide CPP-Lines for Maximum Cost-Efficiency at High Volumes*

谈到CPP薄膜的生产，即用于食品和纺织品包装的金属化薄膜生产，市场出现明显的大批量生产趋势。但仅凭高质量、大批量的生产能力就足以在当今市场上占据优势吗？对这一问题SML给出了答案。

*When it comes the production of CPP film, i. e. for the metallised packaging of food and textiles, there is a clear trend towards high-volume production. But is the ability of to manufacture high quantities at good qualities alone enough to get the edge in today's markets? SML has the answer.*

最大限度提高成本  
效益的超宽生产线

*Extra-wide lines  
for maximum  
cost-efficiency*



SML流延薄膜挤出设备中国区销售经理黄泽峰说：“我们SML认为，连续大批量生产高质量薄膜的可靠设备是先决条件。但归根结底，取得商业成功的最终关键因素是生产效率和低单位成本。”这就是SML不断开发，进一步增加其CPP薄

膜生产线宽度，提高设备最大产能的原因。这种情况在亚洲市场尤其明显，幅宽超过5米的SML高性能CPP生产线已在这一市场运行多年。最近，SML公司又向亚洲客户销售了两条膜宽为6.5米、年产量高达20,000吨的超宽CPP生产线。

### 降低单位成本

与其它CPP薄膜生产线相比，SML超宽CPP生产线的边条比率要低得多。此外，通过边条挤出机实现边条在线回收，是助力SML的CPP生产线获得商业成功的重要因素。因不需要投入额外的人力即可实现更高产能，超宽生产线的单位人工成本也较低。另外，在设备功率消耗方面（kW/kg），超宽幅生产线明显优于产能较低的窄幅CPP薄膜设备。

### CPP金属化薄膜：完备的生产条件确保优异的产品质量

SML超宽CPP生产线中常用的挤出机组合为Ø 180/90/90/90/90mm。为生产后续需进行金属化加工的CPP薄膜，SML的挤出机还配备有盘式或烛式过滤器。这些大面积过滤装置可有效去除熔体中颗粒甚小的胶团，避免薄膜在后续金属化加工过程中出现缺陷。对于超宽CPP流延薄膜生产线，SML推荐其W6000系列转塔式收卷机，收卷膜卷的最大外径为1,300mm。增大的膜卷直径是提高CPP金属化薄膜生产效率的主要推动力。由于蒸镀机的运行时间更长，换卷次数减少，产生的废膜更少。SML的W6000系列转塔式收卷机收卷25µm厚的薄膜时，其膜卷长达5万米！

### 质量、可靠性、技术服务

SML是享誉世界的挤出系统技术领导者，已有25年以上的发展历史，在中国北京和马来西亚吉隆坡设有分支机构。SML研发制造的机械代表了可靠性、服役寿命和产品质量的高标准。与SML合作可以为您提供可靠的项目实施，我们在遵守发货时间、成本和设备性能方面保持有良好记录。设立在北京的代表处为中国各地的众多用户提供全面支持，特别是涉及到我公司产品的深入技术信息咨询、SML技术人员在中国现场服务的灵活组织与协调，以及易损件和零备件的快速发货。

“We from SML would say that machinery, that is reliably delivering premium-quality film in constantly high volumes is a prerequisite. But at the end, the final key to commercial success are productivity and low unit costs,” says Huang Zefeng, Sales Manager Cast Film Extrusion, China. This is why SML is continuously further-developing the widths of its CPP lines in accordance with raising maximum output quantities. This happens especially with regard to the markets in Asia, where SML premium CPP lines with a width of more than 5 meters are in operation for years. Recently, SML sold two extra-wide CPP lines with film widths of 6.5 meters and with an output-capacity of up to 20 000 metric tons per year to Asian customers.

### Bringing unit-costs down

Compared to other lines for CPP film, SML's extra-wide CPP lines have a considerably lower ratio of edge trims. Additionally, the inline feedback of the edge trim scrap by a scraptruder essentially contributes to its commercial success. Labour costs per unit on extra-wide lines are also lower, as they do not require additional personnel to produce higher volumes. And also in terms of power consumption (kW/kg), extra-wide lines clearly beat smaller CPP film machinery.

### CPP films for metallisation: perfect conditions for premium qualities

A frequent extruder-combination in SML's extra-wide CPP lines is Ø 180/90/90/90/90mm. Extruders from SML, which produce CPP films for metallisation in a subsequent separate process, are additionally equipped with disc or candle filters. These large area filters are capable of eliminating even small gel particles. This avoids defects in the film at the following metallising process. For extra-wide CPP cast film lines, SML recommends its turret winder W6000 with a maximum outer roll diameter of 1,300 mm. Bigger roll diameters are a major boost in production efficiency for the manufacturing of metallising CPP films. Due to longer running times at the metalliser, there are less roll changes with less film waste. SML's turret winder W6000 enables a roll length of 50 000 meters or – 50 km! – of 25 µm film.

### Quality, reliability, service

SML is a globally reputed technology leader for extrusion systems with branch offices in Beijing, China and Kuala Lumpur, Malaysia since more than 25 years. Machinery developed and manufactured from SML stand for high standards in terms of reliability, longevity and output quality. Partnering with SML provides you a reliable project implementation and a proven track record of adhering to the agreed times, costs, and performance values. The representative office in Beijing offers comprehensive support to customers all over China: especially when it comes to in-depth technical information about the SML products, the flexible organization of on-site services by SML technicians located in China or the fast shipments of wear and spare-parts.

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[www.smart-extrusion.com](http://www.smart-extrusion.com)

# CHINAPLAS攜橡塑行業開拓變革中的新商機

## CHINAPLAS 2021 – Igniting New Momentum during Challenging Times

13 to 16 April 2021, Shenzhen, P.R. China

“CHINAPLAS 2021 國際橡塑展”將於2021年4月13 – 16日，啟用深圳國際會展中心的16個展館

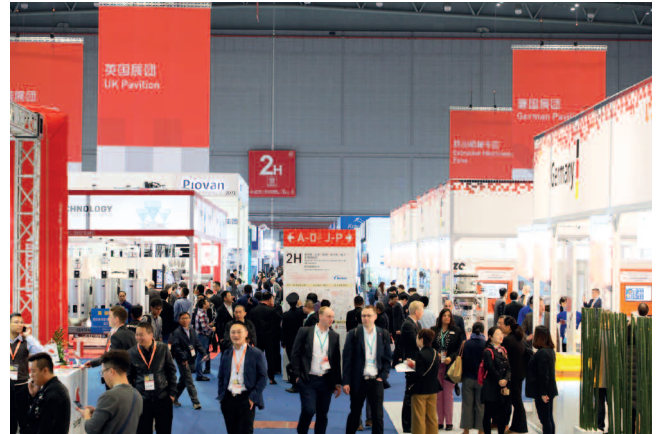
■ 當今世界正經歷劃時代的大變局，製造業所處的全球環境正發生深刻複雜的變化，既面臨著不確定性及挑戰，也孕育著新常態下的新機遇。“CHINAPLAS 2021 國際橡塑展”以“新時代·新動力·永續創新”為展會主題，為橡塑行業擔當發展的“加速器”，注入源源不斷的新動力，共同挖掘新時代變革中的商機。

在新冠疫情給全球經濟帶來了很多不確定性的特殊時期裡，中國正以行動努力為處於動盪變革期的世界貢獻更多確定性。面對疫情大考，中國經濟強勢復甦，繼上半年走出“深V型”反彈曲線後，三季度國內GDP增長達4.9%。據預測，中國將是2020年全球唯一有望實現正增長的主要經濟體。經濟迅速“回血”之時，中國引導消費升級，提升自身創新能力繼續推進高水準對外開放，加快構建以國內大循環為主體、國內國際雙循環相互促進的新發展格局。

暢通國內循環是關鍵，著力點在於產業基礎再造和產業鏈提升。中國配套齊全的產業體系和完善的產業鏈，為科技創新及應用提供了巨大的空間，也正轉化為中國經濟和全球經濟更具韌性、更可持續的增長動能。

進入後疫情時代，用戶對健康、智能、環保、便捷、舒適等高階需求急速放大，如廚房小家電、健身器材等“宅經濟”相關的產品銷售及出口旺盛；生鮮配送、快遞、方便食品等逆勢飆升；多樣化、個性化、品質化的消費訴求釋放，將進一步催生更多新消費、新業態。

無論是擴大內需、推動新基建，還是國產替代、構建塑



料循環，科技創新都是源頭活水，也是夯實雙循環發展的根基與“金鑰匙”。加快科技創新與升級轉型，成為橡塑企業搶佔未來和市場競爭制高點的必然之舉。“CHINAPLAS 2021 國際橡塑展”落戶創新創意之都 - 深圳，將面向中國、放眼亞洲、輻射全球，積極擁抱新時代新變革，快速回應市場新需求，與業界共同探索內外雙循環下的發展之路。

今屆展會展位預訂持續火爆，已有3,600+家展商確定參展，包括奧地利、法國、德國、義大利、日本、韓國、瑞士、英國、美國、台灣地區等10個國家及地區展團，充分體現了海內外企業對“CHINAPLAS國際橡塑展”的認可，以及對橡塑行業前景滿滿信心。展會推出超多前瞻性科技，以及落地的實用解決方案，既有來自全球的前沿技術，亦有自主創新強勢崛起攻佔技術高地的中國科技。

生鮮配送、健康家電等新業態湧現，激發市場新動能

*Demands on fresh food distribution and household electronic appliances are igniting new momentum in the market*



“CHINAPLAS國際橡塑展”匯聚環保及可循環解決方案

*A lot of green and recycling solutions will be found at CHINAPLAS*



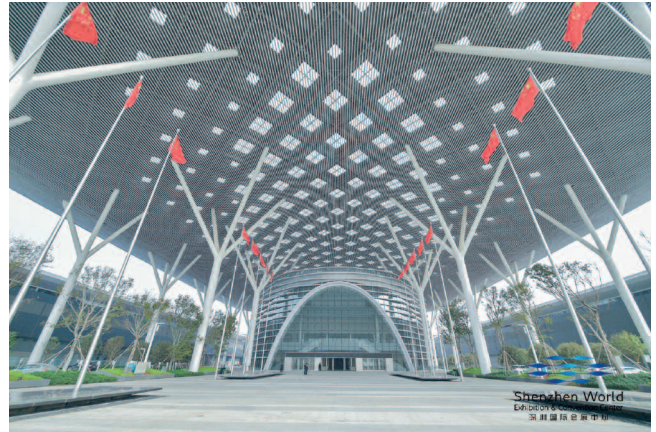
# Chinaplas® 2021 国际橡塑展 2021

■ In today's unprecedented turbulent times, the global manufacturing industry is undergoing profound and complex changes, facing uncertainties and challenges, while opening up new opportunities under the new normal. CHINAPLAS 2021 themed "New Era • New Potential • Innovation for Sustainability", will not only stimulate development in the industries, but also keep the momentum going in the exploration of business opportunities in the new era.

In a special period when COVID-19 has brought a lot of uncertainties to the global economy, China has been taking actions to contribute more certainties to the world. China's economy recovered strongly following the COVID-19 pandemic. After a sharp V-shaped rebound in the first six months of the year, China's GDP expanded 4.9% in the third quarter. It is predicted that China will be the only major economy in the world achieving positive growth in 2020. When the economy is rapidly recovering, China is leading consumption upgrade, enhancing self-innovation capacity to push forward the high level opening up to the world, and hastening the establishment of a new development model featuring dual circulation in the domestics and international markets where the former plays a leading role.

An unimpeded domestic circulation is the key. The main focuses are reconstruction of the industrial foundation and upgrade of the production chain. China has a fully equipped industrial system and a complete industrial chain, providing huge room for technological innovation and application.

In the post-pandemic era, demands for healthcare, smart-tech, eco-friendliness, convenience and comfort have increased sharply. The sales and exports of household products like kitchen appliances and fitness equipment have risen. Demands on fresh food distribution, express delivery and convenience food products have increased in adverse market conditions. A surge in diversified, personalized and high-quality demands will give rise to more new consumption patterns and forms of business.



Technological innovation is the key for China's domestic demand expansion, new infrastructure, domestic substitution and realization of plastics recycling. It is necessary for enterprises to speed up technology innovation, business upgrade and transformation to boost their competitiveness. CHINAPLAS is located in China with strong influence over the Asian region and the world. The upcoming edition of show will be held in Shenzhen, the city of innovation and creativity. CHINAPLAS embraces the changing times actively, responds to the new demands of the market rapidly, and explores the development of the dual circulation together with the industry stakeholders.

Space reservation of CHINAPLAS 2021 is overwhelming. More than 3,600 exhibitors have confirmed their participation, including 10 country/region pavilions from Austria, France, Germany, Italy, Japan, Korea, Switzerland, United Kingdom, United States and Taiwan region. This shows that the enterprises are with full confidence in the prospect of the plastics and rubber industries. Many forward-looking technologies and practical solutions will be introduced at CHINAPLAS, including cutting-edge technologies from all over the world and strong-rising Chinese technologies.

Adsale Exhibition Services Ltd.  
www.ChinaplasOnline.com



## 推广整体解决方案

### Promotion of Total Solutions

戴维斯-标准有限公司将于4月13日至16日参加在中国深圳举行的“2021中国国际橡塑展”，展台位于10号展厅#R11号展位。届时我们将推出涵盖产品功能和支持服务的整体解决方案。由于COVID-19，许多展会都被取消了，此次参展，戴维斯-标准团队期待与客户和塑料行业再次联系。我们将推广片材、发泡、吹膜、热成型、管道、型材和管材、挤出涂覆和流延膜等方面的全球售后服务和设备技术。

*Davis-Standard will market total solutions encompassing product capabilities and support services at booth #R11, Hall 10 during Chinaplas 2021, April 13-16, in Shenzhen, China. After so many COVID-19 show cancellations, the team looks forward to reconnecting with customers and the greater plastics community. Global aftermarket services and equipment technology for sheet, foam, blown film, thermoforming, pipe, profile and tubing, cast film, extrusion coating and liquid coating will be promoted.*



图为dsX flex-pack™ 300S挤出和层压生产线，专为亚洲软包装市场打造

*Pictured is the dsX flex-pack™ 300S extrusion and lamination line, built specifically for the Asian flexible packaging market*

特别是亚洲，戴维斯-标准的医疗管，流延膜，吹膜和挤出涂覆设备上的高产出系统，对于医疗和包装应用已必不可少。戴维斯-标准各生产基地的业务持续增长，由此带来的售后升级和生产线优化以提高产品性能的机会也在增长。这包括提高生产效率、减少浪费和长期持续地帮助客户获得良好的盈利能力和生产出更好的产品。

戴维斯-标准（苏州）机械有限公司是戴维斯-标准在亚洲的客户服务中心及生产中心。设备制造和装配、库存和售后服务、现场服务和客户现场安装等领域的发展对支持客户至关重要。苏州也是测试硬包装和软包装产品的研发能力所在地。2019年，戴维斯-标准苏州工厂在现有厂房附近增加了一个35000平方英尺（3251平方米）的厂房，以用于电气柜组装及仓储。

戴维斯-标准将展示其dsX flex-pack™ 300S 的最新应用。这种单站共挤复合生产线专门为亚洲软包市场开发。这是戴维斯-标准美国、德国和中国团队合作的成果，目前在苏州工厂制造。其优势在于价格有竞争力，设备占用空间小，生产速度快及交期短。300S可以支持650至1,350mm的幅材宽度，并且设计用于具有直接凹版底漆涂布和共挤出站为纸张，薄膜和铝箔的加工生产速度，可达每分钟300米。该生产线的标志包括一致的最终产品质量，更长的正常运行时间和生产率，减少废料以及广泛的应用领域。

随着全球工厂朝着更高的效率发展，戴维斯-标准也将提出智能工厂解决方案。凭借我们对机械和加工的了解，戴维斯-标准通过工业物联网（IIoT）整合了互连性和功能，以分析实时KPI并通过机器控制系统启用警报或操作提示。DS

Activ-Check™系统将监视生产线的主要参数（挤出机，复合机，流延段，涂布段，放卷机，收卷机），以提供潜在的故障的早期通知，并使用可配置的仪表板为工艺改进提供有价值的的数据。

展台参观者可以找到戴维斯-标准每一条产品线的信息，包括戴维斯-标准近几年收购的几家公司的设备技术。Maillefer在全球范围内提供电线电缆和管道设备的销售，和戴维斯-标准苏州工厂生产的FPVC医疗管及共挤生产线形成互补，满足全球客户的需求。包括了汽车管、冷热水管、滴灌管、医疗管、微管、海洋软管和定制生产线。加拿大宾顿工程公司的加入，进一步支持了吹膜在区域基础设施建设上的应用。热成型系统有限责任公司（TSL）使戴维斯-标准公司能够提供片材挤出、模具、自动化和造粒方面的解决方案，以支持热成型应用，如冷饮杯/盖、快餐外卖容器、蛤壳包装和面条碗、水果托盘和咖啡粉包装。最近，Deacro Industries的加入，则增加了用于纸张、薄膜和箔材转换过程的高性能分切、复卷和卷处理设备的设备选择。

Specific to Asia, Davis-Standard's high-output systems for medical tubing, cast film, blown film and extrusion coating have been essential to medical and packaging applications. The company's installed base continues to grow as do vertical opportunities in aftermarket upgrades and optimization of lines to improve performance. This includes opportunities for more efficient processing, reduced waste and long-term sustainability to support profitability and better products.

Davis-Standard (Suzhou) Machinery, Co., Ltd. is central to the company's customer focus and expansion in Asia. Developments in the areas of machine building and assembly, inventory and aftermarket services, field service engineering, and installation at customer sites have been essential to supporting customers. Suzhou is also the site of R&D capabilities for testing rigid and flexible packaging products. In 2019, Davis-Standard added a 35,000 square-foot (3,251 square-meter) facility near the existing Suzhou shop to house control panel assembly and provide warehousing.

Davis-Standard will highlight its dsX flex-pack™ 300S during the show. This single station extrusion and lamination line is a collaboration between Davis-Standard's design teams in the U.S., Germany and China, and is built at the Suzhou facility to

meet the requirements of the Asian flexible packaging market. It is advantageous for converters as it accommodates the pricing, machine footprint, output, and key technical attributes demanded by Asian customers. The 300S can support web widths from 650 to 1,350mm, and is engineered for processing rates up to 300 meters per minute for paper, film and aluminum foils with direct gravure primer coating and coextrusion lamination stations. Hallmarks of the line include consistent end-product quality, greater uptime and productivity, reduced waste and application versatility.

Smart factory solutions will also be presented as plants worldwide move toward greater efficiency. Building on their knowledge of machinery and processes, Davis-Standard has incorporated interconnectivity and functionality via the Industrial Internet of Things (IIoT) to analyze real-time KPI's and enable alarms or action prompts via a machine control system. This system, the DS Activ-Check™, monitors key parameters of a converting line (extruders, laminators, casting section, coaters, unwind, winders) to provide early notifications of potential failures and valuable data for process improvement using configurable dashboards.

Booth visitors can expect to find information on every Davis-Standard product line, including equipment technology from recent acquisitions. Maillefer has delivered wire and cable and pipe and tubing equipment on a global level, complementing the FPVC medical tubing and coextrusion applications supported by the Suzhou location. This includes pipe and tube systems for automotive, heating and plumbing, irrigation, medical, micro-duct, off-shore and custom lines. Adding Brampton Engineering has further supported regional infrastructure for blown film applications. Thermoforming Systems LLC (TSL) has enabled Davis-Standard to offer solutions in sheet extrusion, tooling, automation, and granulating to support thermoforming applications, such as cold drink cups/lids, fast food take-out containers, clamshells and noodle bowls, fruit punnets and coffee pods. Most recently, the addition of Deacro Industries has increased equipment options with high-performance slitting, rewinding and roll handling equipment for the converting process of paper, film and foil materials.

► **Davis-Standard, LLC**  
1 Extrusion Drive, Pawcatuck, CT, 06379-2313, USA  
[davis-standard.com/event/chinaplas/](http://davis-standard.com/event/chinaplas/)

[www.smart-extrusion.com](http://www.smart-extrusion.com)

# 提供全方位产品和服务

## Presentation of the Full Range of Products and Services

经过一年的间歇，埃瑞玛 (EREMA) 特别期待今年4月13日至16日在深圳举行的中国国际橡塑展 (展位10C45)。由于冠状病毒造成的不确定性，这家设备制造商本次将不会实物展示回收设备，但是他们仍然能够提供有关PET回收、消费后塑料回收和生产废料回收领域的全方位成套服务。来自埃瑞玛上海子公司的团队将负责展会展台的接待。在展台上，客户以及对产品和服务感兴趣的人将能够采用视频会议的方式与在奥地利公司总部的人员交谈。这样，公司就能够针对特定客户提供咨询。

*After a year's break, EREMA is particularly looking forward to this year's Chinaplas trade fair from 13 to 16 April in Shenzhen (Booth 10C45). Although, due to Corona, the machine manufacturer will not have a recycling machine on display this time, they will still be able to present the entire portfolio of services for PET recycling, post consumer recycling and recycling of production waste. Visitors to the trade fair stand will be looked after by the team from EREMA's Shanghai subsidiary. From the stand, customers and*

埃瑞玛的订单和营业额均有大幅增长。对于埃瑞玛而言，中国是一个非常重要的市场。在2020年底之前，中国已经将冠状病毒疫情良好地控制了好几个月，来自奥地利的技术人员团队利用三个月的时间拜访了全国各地的客户，并启动了若干台回收设备。2021年3月，一个团队将再次出发，并在强制性检疫隔离期过后，开始调试运行更多设备。

### PET、消费后的塑料和生产废料的回收利用解决方案

埃瑞玛极为重视全球对PET废料回收解决方案的强烈需求。作为设备制造商，凭借久经考验的VACUREMA®技术，



VACUREMA basic –  
埃瑞玛版权 埃瑞玛总部安斯菲尔登

VACUREMA basic (copyright EREMA)

*those interested in the products and services will be able to talk to people at the company's headquarters in Austria in hybrid meetings using video conferencing. This makes it possible for the company to offer customer-specific consultation.*

埃瑞玛能够提供范围广泛的加工方案供客户选择，包括涉及直接接触食品的方案。生产线可完成从PET到片材、PET到纤维、PET到捆扎带以及PET到瓶坯的加工任务。

对消费后塑料制品回收这一细分市场的关注也日益增长。在欧洲，由于欧盟规定了强制回收法规，将消费后的塑料回收再利用已成为塑料行业的主要话题。埃瑞玛在使回收料适合于应用到化妆品和食品行业的高质量应用中扮演着重要角色，通过提供该项技术，开拓了新的销售市场。FDA (美国食品药品监督管理局) 于2019年8月确认，只要使用的原料来自牛奶和果汁瓶，采用INTAREMA®TVEplus®Reg-



rindPro®设备加上ReFreshier组件所生产的再生料适用于生产牛奶和果汁瓶，以及肉类托盘、一次性餐具和餐具。在2020年11月，对于使用此工艺加工出的再生料，FDA确认了更多的应用范围。除所有HDPE饮料容器外，还可加工HDPE、PP和PET饮料瓶的HDPE瓶盖。包含高达100%再生料的原料可用于生产与各种食品直接接触的容器。由于中国支持寻求实施生产废品回收利用解决方案的公司，因此埃瑞玛也希望该部门在未来有所增长。

### 埃瑞玛很好地满足了增长的需求

为了满足在中国乃至全球对其回收技术不断增长的需求，埃瑞玛建立了新的生产车间，并且建造了更多的仓库和办公楼，将生产场地的面积扩大了一倍。他们还扩大了埃瑞玛客户中心，该中心使用客户的原材料在一系列回收机器上进行测试。

CHINAPLAS和CPRJ塑料回收与循环经济大会暨2021年展示会的子论坛：先进的回收技术实现了产业链闭合循环：4月12日，上午8.30-下午12.30，埃瑞玛上海子公司总经理James Qiu演讲，主题是：“埃瑞玛的塑料回收技术：从消费后的废塑料到高质量产品，回收率高达100%”

China is a very important market for EREMA, who have gained a significant increase in both orders and turnover. Now that China has had the Corona situation well under control for several months, teams of technicians who travelled from Austria were able to visit customers across the country for several weeks before the end of 2020 to start up several recycling machines. In March, a team will set out again and, following a mandatory quarantine period, will begin commissioning several more machines.

### Recycling solutions for PET, post consumer and production waste recycling

EREMA recorded strong demand worldwide for recycling solutions for PET waste. With its proven VACUREMA® technology, the machine manufacturer offers a wide range of processing options for applications involving direct food contact, such as the inline processes PET to sheet, PET to fibre, PET to strapping and PET to preform.

Growing interest is also noticeable in the post consumer segment. In Europe, the use of post consumer recycle has become a major topic in the plastics industry due to legal recycling regulations imposed by the European Union. By providing the technology, EREMA plays a major role in making recycle suitable for high-quality applications in the cosmetics and food industries, which in turn opens up new sales markets. The FDA (U.S. Food and Drug Administration) confirmed in August 2019



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*EREMA headquarters Ansfelden (copyright Techquadrat Werbetchnik)*

that the recycling process based on an INTAREMA® TVEplus® Re grindPro® machine plus ReFreshier module is suitable for the production of milk and juice bottles, as well as meat trays, disposable tableware and cutlery, provided the input material comes from milk and juice bottles. In November 2020, the FDA confirmed an additional input stream and more application uses for the recycle treated using this process. In addition to all HDPE beverage containers, HDPE closures of HDPE, PP and PET beverage bottles can also be processed. Material containing up to 100 percent recycle can be used in the production of containers for direct contact with food of all kinds. Because China supports companies looking to implement recycling solutions for production waste, EREMA also expects growth in this segment in the future.

### EREMA is well set to handle increasing demand

In order to meet the increasing demand for its recycling technologies in China and worldwide, EREMA has doubled the area of its production site, by building a new production hall, and built additional warehouses and office buildings. They have also expanded the EREMA customer centre, where tests are carried out on a range of recycling machines using customers' input material.

CHINAPLAS and CPRJ Plastics Recycling and Circular Economy Conference and Showcase 2021 – subforum: Advanced recycling technologies closing the loop of industry chain: **12 April, 8.30 am - 12.30 pm**, Presentation by James Qiu, General Manager of EREMA's Shanghai subsidiary, on the topic: "**Plastic recycling technology made by EREMA: up to 100% recycled material – from post-consumer waste to high-quality product**"

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# 创新型测量、控制、检测、分析与分拣系统

## Innovative Measuring, Control, Inspection, Analysis and Sorting Systems

SIKORA与您相约2021中国国际橡塑展  
(展位号 10G05)

2021年4月13日至16日，在深圳举行的2021中国国际橡塑展上，SIKORA 将展出其创新型测量、控制、检测、分析与分拣系统。观展者可以了解到SIKORA在管道、管材以及塑料行业中，为生产过程品质控制、工艺优化以及成本节省等提供保障的设备和系统。

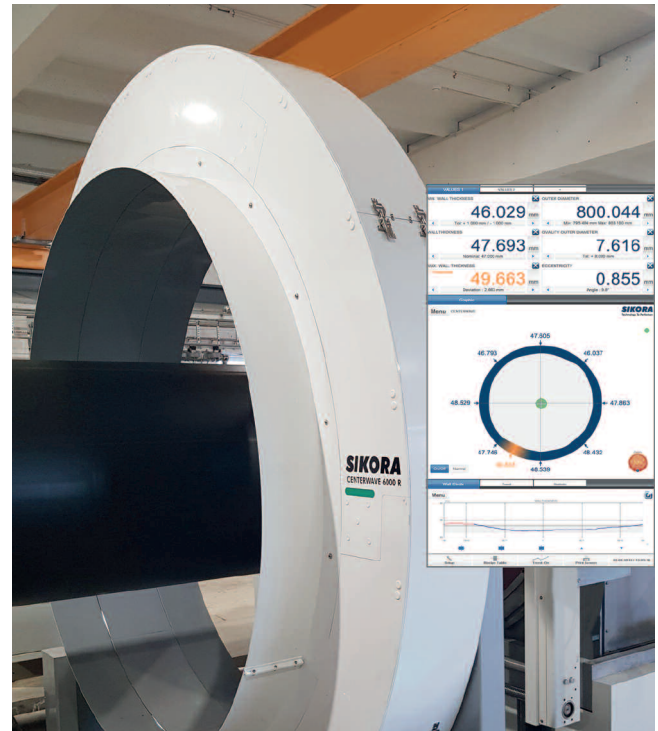
Meet SIKORA at Chinaplas 2021  
(booth 10 G05)

At Chinaplas 2021, from April 13 to 16, 2021, in Shenzhen, SIKORA will present its innovative measuring, control, inspection, analysis and sorting systems. At the SIKORA booth, visitors can expect a comprehensive portfolio of devices for quality control, process optimization and cost savings in the pipe, hose and tube as well as plastics industries.

在塑料颗粒的在线检测方面，SIKORA将展出其先进的洁净度检测系统 ( PURITY SCANNER ADVANCED )。该系统独特之处是将X射线与多达3个光学成像系统相结合，因而可对颗粒内部小至 50 $\mu$ m 的金属杂质进行检测。此外，光学成像系统还可以检测出颗粒表面的黑点和焦烧杂质。检测到含杂质的颗粒后，系统立即通过压缩空气将其分离。该系统配备的软件可向操作人员提供关于杂质大小、位置与数量的统计评估数据。

在此次展会上，SIKORA展出了基于毫米波技术的CENTERWAVE 6000系统，该系统可在管材挤出过程中实现产品质量控制，可精确测量大规格塑料管的内/外径、椭圆度、壁厚及内轮廓(熔垂)。该测量方法不需要任何耦合介质，不受温度及材料的影响，无需校准。SIKORA中国区总裁陈万彬解释说：“CENTERWAVE 6000的简便操作及其精确度为最终产品的高品质提供了保障，并且节省了成本，实现了最佳效率。”他补充说：“我们期待今年参加Chinaplas并在展会上与我们的客户见面。”

X-RAY 6000 PRO是SIKORA展台上的另一个亮点。它可以



用于挤出生产线在线尺寸测量的CENTERWAVE 6000将在Chinaplas上展出

The CENTERWAVE 6000 for online pipe dimension measurement in extrusion lines will be presented at Chinaplas

测量管材的内/外径、壁厚、偏心以及椭圆度，特别是可测量多达三个不同材料层的厚度。此次展会，SIKORA还将展出极高可靠性的外径测量仪LASER 2000系列和带有表面缺陷检测功能的高端外径测量仪LASER 6000系列。

For online inspection and sorting of plastic material, SIKORA showcases the PURITY SCANNER ADVANCED. The system uniquely combines an X-ray with up to three optical cameras. Therefore, metal inclusions with a size down to 50  $\mu$ m in the raw material can be detected. Furthermore, black specks and

PURITY SCANNER ADVANCED可检测颗粒内部的金属杂质与颗粒表面的黑点及  
 焦化

*The PURITY SCANNER ADVANCED detects metallic contamination inside the pellet as well as black specks and burns on the pellet's surface*



burns on the pellet's surface are detected by the optical cameras. Faulty pellets are separated immediately after detection via compressed air. The integrated software provides the operator with a statistical evaluation including information about the size, area and number of the detected contaminants during production.

For a 100 % quality control during the extrusion of pipes, SIKORA exhibits the CENTERWAVE 6000, a system based on millimeter wave technology. The device precisely measures the diameter, ovality, wall thickness, the inner profile as well as the sagging of the pipe. The measuring principle does not require any coupling media or calibration and is not influenced by temperature or the plastic material. "The easy operation of the CENTERWAVE 6000 and its precision lead to the highest quality of the final product as well as cost savings and optimal efficiency." explains Wanbin Chen, President of SIKORA China, and adds, "We look forward to joining this year's Chinaplas

and to meeting our customers at the tradeshow."

The X-RAY 6000 PRO is a further highlight at the SIKORA booth. It measures the wall thickness, eccentricity, the inner and outer diameter and the ovality of hoses and tubes. Hereby, the thickness of up to three different material layers is measured. SIKORA's presentation in Shenzhen is completed by reliable diameter measuring systems of the LASER Series 2000 as well as LASER Series 6000, which in addition also offer a lump detection.

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 www.sikora.net

# 马格集团的领先技术将在2021国际橡塑展展出

## Leading Technologies on Display at Chinaplas 2021

马格集团是一家多元化的全球解决方案提供商，为聚合物行业提供泵和过滤系统、造粒和粉碎系统、回收系统和数字化解决方案。2021年4月13日至16日在中国深圳2021国际橡塑展展会10号馆10Q01展位将展出最新产品。

*MAAG Group, a broadly diversified global solutions provider of Pump & Filtration Systems, Pelletizing & Pulverizing Systems, Recycling Systems and Digitalization for use in the polymer industry is showing its latest innovations at Chinaplas 2021 in Shenzhen, China, from April 13-16 in hall 10, booth 10Q01.*

ETTLINGER ERF350, 高性能熔体过滤器，用于过滤污染严重的聚合物原料

*ETTLINGER ERF350, a high performance melt filter for the filtration of heavily contaminated polymer feedstock*

这次展出的一大亮点将是ERF350，一款高性能熔体过滤器，非常适用于过滤高度污染的聚合物塑料。过滤器是通过旋转的激光打孔滤网进行自我清洁，通过从滤网外部向内部连续不断地流入熔体。刮刀持续去除残留在滤网表面的污染物，并将其输送到排污螺杆持续排出。从而使过滤器可实现完全自动化，避免了频繁更换过滤网，确保挤出机生产线的连续生产。优点：熔体损失极低，熔体充分混配均匀。

马格集团展台的另一个亮点是PEARLO®水下造粒系统，该系统可高效灵活地生产球形粒子，产量可达36000公斤/小时。紧凑和模块化结构，它只需要占用非常小的空间。电子控制的EAC技术保证了切粒刀在操作过程中的精确压力，从而使长时间的运行没有中断，始终保持高的造粒质量。

在同一设备领域，马格集团展示了适用于加工各种硬质和软质材料的BAOLI®-3第三代干切式拉条造粒机。这些造粒机的关键部件在德国制造，所有规格均符合德国适用的安全标准。马格在造粒机方面拥有60多年的经验，并已在中国安装了约800台BAOLI造粒机。与之前的两代BAOLI机型一样，其自动切割室锁定系统可以在增进操作员安全性的同时实现快速处理。



马格从其广泛的齿轮泵产品范围中选取了采用x6级设计的extrex®齿轮泵，送往中国国际橡塑展展示。正如所有采用x6设计的产品一样，马格对其所有齿轮和轴组件，包括轴承和密封件做出了全面改进，并优化了组件配合。专门研发的齿面及低压缩位置可以在低剪切速率下实现非常高的压力。由此可进一步提升产品质量、容积效率以及均匀而可靠的生产。

The highlight of the booth will be the ERF350, a high-performance melt filter for the filtration of heavily contaminated polymer feedstock. The filter is self-cleaning with a rotating, perforated drum, through which there is a continuous flow of melt from the outside to the inside. A scraper removes contaminants that are held back on the surface and feeds them to the discharge system. This enables the filter to operate automa-

tically, without disruptions over long periods and without having to replace the screen. The advantages: ultra-low melt losses and good mixing and homogenizing of the melt.

Another highlight in the MAAG Group booth is the PEARLO® underwater pelletizing system for the highly efficient and flexible production of spherical pellets with throughputs of up to 36,000 kg/h. Compact and modularly structured, it requires only a very small footprint. Electronically controlled EAC technology guarantees precise pressure of the pelletizing knives during operation, thereby enabling long runtimes free of interruptions with consistently high pellet quality.

In the same equipment segment, MAAG Group shows a BAOLI®-3 third-generation dry-cut pelletizer for processing hard and soft materials. The key components of these pelletizers are manufactured in Germany, and all versions meet the requirements of applicable safety standards in Germany. Maag has more than 60 years' experience in pelletizers and has already installed around 800 BAOLI pelletizers in China. As with previ-

ous BAOLI generations, the automated cutting chamber locking system enables fast handling while supporting operator safety.

From its extensive range of gear pumps, MAAG Group will be presenting the extrex® gear pump in x6 class design at China-plas. As with all x6 versions, MAAG Group has completely re-engineered and redesigned the components, from the shafts through to the bearings and seals, and optimized the interaction of the components. Specially developed gear teeth with low compression allow very high pressures to be achieved with low shear rates. The result is a further increase in achievable product quality, volumetric efficiency, as well as production consistency and safety.

► MAAG Group  
www.maag.com

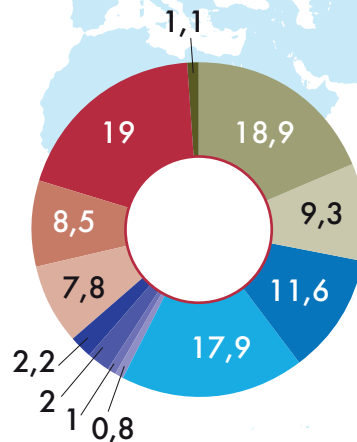
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# 技术创新：领先的物料处理系统

## Leading Innovations for Material Handling

经过一年的强制停顿，“中国国际橡塑展”将于2021年4月13日至16日再次在中国深圳举行。百旺（Piovan）集团及其品牌-Piovan, Penta, Aquatech和Doteco –将在10号展厅J41展位上展示完整配置的系统 and 全套产品，包括最具创新性的技术：从干燥到配料系统，从原材料可追溯到工业4.0的解决方案，包括温度控制和冷却系统，能够提供完整的交钥匙解决方案。

*After a year of forced break, in 2021 Chinaplas exhibition will take place again from 13 to 16 of April in Shenzhen, China. Piovan Group with its brands – Piovan, Penta, Aquatech and Doteco – will be at the hall 10, booth J41 to display the complete offer of fully integrated systems including the most innovative technologies: from drying to dosing systems, from traceability of raw materials to solutions for Industry 4.0, including temperature control and cooling systems to provide complete turn-key solutions.*



Quantum Q12

Piovan将展示手动耦合站Handlink +，现在，通过采用新的RFID（射频识别）标签系统进行了增强，该系统可以检查源和目的地之间的匹配是否正确。重点关注配料技术，展出的是Quantum Q12称重式批次混料机和Exacta称重计量微量投料单元，即使单个颗粒也可以计量。

Penta是百旺集团的成员公司，该公司设计和生产用于粉状原料的存储和处理大型系统，同时还将展示其在配料领域的系统。来宾还将有机会看到Vakupulse，这是一种采用

密相输送物料的系统，该系统特别适合于在短距离内以低速和低流量输送精细的原料。

将为新型系列分析仪器提供专门的展区，通过对PET预成型体中的参数内容进行实时分析，从而对生产实现最大程度的监控。范围包括MoistureMinder和Inspecta，这两种分析仪器有两种不同版本，即乙醛版本和苯版本，能够分析片材、瓶子和粒子。此外，还将展出用于测量干燥系统中工艺空气露点的新型便携式传感器MobileDewP。

所有来宾都将能够体验Winfactory 4.0的现场演示，Winfactory 4.0是为智能工厂设计的数字监控软件，旨在提高工厂的生产率并优化产品质量。

高效工业冷却解决方案将仍然以Aquatech品牌展示。Aquatech将展示DigitempEvo，即一种自动控温的系列冷冻机，可确保高性能的同时有极低的能耗，同时还提供Easytherm温度控制单元的全系列产品。

“2021中国国际橡塑展”将为百旺集团提供



Inspecta



### Smart Factory

able sensor for measuring DewPoint of the process air in the drying systems.

All visitors will be able to experience the live demo of Winfactory 4.0, the digital supervision software designed for the Smart Factory with the aim to increase plants' productivity and optimise product quality.

High-efficiency industrial cooling solutions will also be on display under the Aquatech brand. Aquatech will exhibit DigitempEvo, the line of thermorefrigerators which guarantees high perfor-

mance with very low energy consumption and the full range of Easytherm temperature control units.

The Chinaplas 2021 edition will for Piovan Group, be the opportunity to present Doteco, the company based in Mirandola, Modena, Italy. Doteco is one of the world leaders in dosing technologies for plastic films (for food and non-food packaging) and synthetic fibers. The company was acquired by Piovan Group in October 2020. From Doteco, on display is Blendo Adroit, the loss-in-weight gravimetric blender dedicated to all those applications where accuracy and precision at very low throughputs and percentages are essential requirements. At

Chinaplas also is Grado Adroit, the gravimetric batch blender with a fully modular configuration to adapt to the customer manufacturing needs even if these change over time and Protune Breeze, the high performance dual-lip automatic air ring for blow film applications to maximize the bubble cooling rate and utilize maximum blower efficiency with proven gauge deviation reduction.



Vakupulse

一个展示Doteco公司的机会。Doteco位于意大利米兰多拉市的摩德纳 (Mirandola, Modena), 是塑料薄膜 (食品和非食品包装) 和合成纤维行业计量技术的全球领导者之一。该公司于2020年10月被百旺集团收购。Doteco在展会上展出的是Blendo Adroit, 这是一种失重式称重计量和混料装置, 专用于那些需要非常低的添加量和百分比, 同时又要求高精密度和准确度的场合。在国际橡塑展上还会展出Grado Adroit, 这是一种称重式批次混料机, 具有完全模块化的配置, 即使这些需求随时间变化也可以满足客户的生产需求; Protune Breeze是一种高性能双唇自动风环, 用于吹膜设备, 可最大程度地提升膜泡的冷却效率, 并最大程度发挥鼓风机效率, 同时, 对减小厚度偏差的作用也得到了验证。

Piovan will showcase Handlink+, the manual coupling station now enhanced with a new RFID (Radio Frequency Identification) tagging system, which allows to check if the match between sources and destinations is correct. With focus on dosing technologies, on display Quantum Q12, the gravimetric batch blender and Exacta, the gravimetric micro-dosing unit to dose even one single granule.

Penta, the Piovan Group company that designs and produces large-scale systems for the storage and handling of raw materials in powdered form, will also be present showing its systems for the compounding sector. Visitors will also have the opportunity to see Vakupulse, the system for conveying of materials in the dense phase, which is particularly suitable for conveying delicate raw materials at low speeds and flow rates over short distances.

A dedicated corner will be for the new range of instruments of analysis for utmost production monitoring, by providing real time analysis of parameters content in the PET preforms. This range includes Moisture Minder and Inspecta, the instrument of analysis available in two versions for Acetaldehyde or Benzene and able to analyse sheet, bottles and granules. In addition, there will be on display also MobileDewP, the new port-

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# 为塑料生产提供质量保证

## Garant for Quality in Plastic Production

去年对于国际展览行业来说是非常艰难的一年。如今春暖花开，Mahlo GmbH + Co. KG 很高兴地宣布将参加 4 月 13 日至 16 日在中国深圳举办的 Chinaplas 国际橡塑展。欢迎塑料行业的专家们届时莅临 10D03 号展位参观指导。世界不停在变化，但 Mahlo 系统的初心未改，我们始终致力于帮助塑料行业提高生产效率和产品质量。

*After a difficult year for the international trade fair world, Mahlo GmbH + Co. KG at booth 10D03 is especially pleased to meet experts of the plastics industry in person at the Chinaplas trade fair that takes place from April 13 to 16 in Shenzhen. Even though a lot has changed in recent months – what remains the same is that Mahlo systems help to make plastics production even more effective and of higher quality.*

在 Chinaplas 展会上，Mahlo 将在 10 号展位重点展示扫描式质量检测系统 Qualiscan QMS。该模块化系统由一组传感器和一个检测框架构成，适用于测量、记录和控制多种关键参数，例如整个被测产品幅宽的克重、水份或层厚。该系统有望显著提高生产设施的能源效率、优化原材料利用率，并改善生产可持续性。

Mahlo 中国首席代表费维强解释道：“橡塑产品的需求不断增加，给制造商带来了重大挑战。”但是，在快速制造大量产品的同时，我们必须注意节约资源。“当然，还必须保证生产利润。”如果能够实现层厚等关键参数的自动控制和调节，那么我们就可以生产出始终如一的优质产品，彻底消除由于指定的目标值不正确而不得销毁整批产品的风险。另外，如果能够保证只使用真正所需数量的原材料，那我们就可以杜绝材料浪费。

Mahlo 届时将在展位上展示全面的传感器组合，让参展者领略到“德国制造”的最新技术发展。从  $\beta$  射线到 X 射线，从红外光干扰到白光干扰，我们的系统能够在各种应用中实现精确测量。“我们很乐意在 Chinaplas 上向所有参展者详细介绍该系统，帮助塑料加工行业解决各种迫在眉睫的问题和挑战。”

At Chinaplas, the focus at the Mahlo booth will be on the traversing quality measuring system Qualiscan QMS. The modularly designed system, which consists of sensors and measuring frames, measures, logs and controls critical parameters such as basis weight, moisture or layer thickness across the entire fabric width. This makes it possible to drastically increase



Qualiscan QMS配备两个横移传感器  
(© 2021 Mahlo GmbH + Co. KG)

*Qualiscan QMS with two traversing sensors  
(Copyright © 2021 Mahlo GmbH + Co. KG)*

the energy efficiency of production facilities, optimize the use of raw materials and produce more sustainably.

"Manufacturers are faced with the challenge that the demand for plastic fabric products is constantly increasing," explains Frank Fei, Mahlo's China representative. However, the products should not only be manufactured quickly and in large quantities, but also in a way that conserves resources. "And of course, manufacturing still has to be profitable." If important parameters such as layer thickness are automatically controlled and regulated, this results in consistently high quality on the one hand. There is no risk of having to destroy entire batches because the specified target values are not correct. On the other hand, no unnecessary material is wasted if only the amount of raw material that is really needed is used.

At the Mahlo booth, visitors can get to know the latest developments "made in Germany" from the comprehensive sensor portfolio. The right measurement for every application, from beta to X-ray to infrared and white light interference. "With our systems, which we are happy to explain in more detail to the Chinaplas audience, we want to provide answers to pressing questions and challenges for the world of plastics processing."

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# 挤塑

**EXTRUSION  
ASIA EDITION**

**VM 出版社有限公司 / VM Verlag GmbH:**  
Antoniterstraße 17, D-50667 Cologne, Germany

**VM 出版社有限公司 / 编辑+出版**  
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**第25出版年 – 出版次数：每年2期**  
25. Volume – Frequency: 2 issues a year


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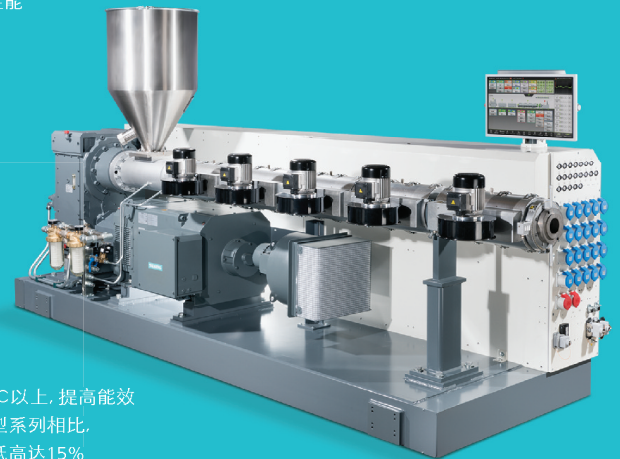
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